BBC

The best-selling magazine for Acorn machines

# ACORN USER

# KIDS' LAB

## Can home software be exciting, addictive *and* educational? We get the kids' real verdict




## On the move

What to buy for your portable and Pocket Book




## CLIP ART REVIEW

Take a look at ready-made artwork

## PROGRAMMER'S BIBLE

The new programmer's manual reviewed


£1.80 SEPTEMBER 1993

ISSN 0263-7456

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9 770263 745024

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## New Acorn Hardware

**Official Acorn Publishing Dealer**

| | |
|---|---|
| A540 4Mb Ram, 120Mb HD | £1995.00 |
| A4 4/60 Mb HD Portable c/w Acorn shoulder bag | £1699.00 |
| A4 2 Mb FD Portable | £1399.00 |
| A5000 / 2Mb Ram, 80Mb HD, Arm 3, Acorn Multiscan Monitor | £1399.00 |
| A5000 / Learning Curve / 2Mb Ram as above c/w software | £1445.96 |
| A5000 / 4Mb Ram, 120Mb HD Arm 3, Acorn Multiscan Monitor | £1599.00 |
| A5000 ES - Econet System Arm 3, Acorn Multiscan Monitor | £1299.00 |
| A5000 NS - Network System Arm 3, Acorn Multiscan Monitor | £1399.00 |
| A4000 Home Office System Arm 250, Acorn Monitor | £999.00 |
| A4000 Home Office Multiscan System Arm 250, Acorn Multiscan Monitor | £1049.00 |
| A4000 HD 80 System Arm 250, Acorn Monitor | £949.00 |
| A4000 HD 80 Multiscan System Arm 250, Acorn Monitor | £999.00 |
| A3010 Family Solution Arm 250, TV Modulator | £424.68 |
| A3010 / 2Mb Learning Curve System Arm 250, Acorn Monitor | £680.00 |
| A3020 / 2Mb FD System Arm 250, Acorn Monitor | £749.00 |
| A3020 / 2Mb FD Multiscan System Arm 250, Acorn Multiscan Monitor | £799.00 |
| A3020 / 2Mb HD 60 System Arm 250, Acorn Monitor | £899.00 |
| A3020 / 2Mb HD 60 Multiscan System Arm 250, Acorn Multiscan Monitor | £949.00 |

**A Finance option is available on the above machines (14.7% APR)**

Written details available on request

**Acorn Special Needs Centre**

**We operate the Acorn Teacher and Academic Schemes**

Please call for free information packs

## A540 Upgrades

| | |
|---|---|
| 4Mb Ram Upgrade | £299.00 |
| Taxan 795 VIDC Modes Disc | £7.50 |
| Technical Reference Manual | £65.00 |

## A5000 Upgrades

| | |
|---|---|
| 2Mb Ram Card | £110.00 |
| Dust Cover (One piece) | £12.95 |
| Technical Reference Manual | £65.00 |

## A3000/10 Upgrades

| | |
|---|---|
| 1 Mb Ram A3010 (2Mb in total) | £39.00 |
| 4 Mb Ram A3010 | £128.00 |
| A3010 to AKF12/17 adaptor | £9.95 |
| 1 Mb Ram (2 Mb in total) | £45.00 |
| 4 Mb Ram | £128.00 |
| 20 Mb Int Hard Disc (IDE) | £199.00 |
| 5.25" External f/disc buffer | £39.00 |
| Joystick (Quickshot III) | £12.00 |
| Joystick Interface | £32.00 |
| Serial Upgrade | £19.00 |
| User & Analogue Podule | £46.00 |
| User & Midi Podule | £46.00 |

## A400 Upgrades

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|---|---|
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| 2 Mb Ram | £65.00 |
| 3 Mb Ram | £99.00 |
| 5.25" Ext. floppy disc int. | £39.00 |

## A4 Upgrades

| | |
|---|---|
| A4 2 MB RAM Upgrade | £99.00 |
| A4 60 MB HD Upgrade | £350.00 |
| A4 Battery Pack | £50.00 |
| A4 Econet Upgrade | £50.00 |
| A4 Shoulder Bag | £35.00 |
| A4 Technical Reference Manual | £65.00 |

## RISC OS 3

| | |
|---|---|
| RISC OS 2 -> 3.1 Upgrade | £41.70 |
| RISC OS 3 -> 3.1 Upgrade | £16.17 |
| RISC OS 3 Hardware Kit A300 | £25.00 |

## Expansion Cards

| | |
|---|---|
| Econet Module | £46.00 |
| Hawk V9 Video Digitiser | £199.00 |
| I/O Expansion Card | £79.00 |
| Midi Expansion Card | £65.00 |
| SCSI Expansion Card (Acorn) | £229.00 |
| SCSI Expansion Card (Morley) | £149.00 |

**ROMBO Colour Digitisers**

| | |
|---|---|
| A3000 inc. podule housing | £72.30 |
| A400 / A5000 | £72.30 |

## Aleph 1/Atomwide

| | |
|---|---|
| Arm 3 Upgrade | £165.00 |
| 386 PC Expansion Card 1Mb | £300.00 |
| 386 PC Expansion Card 4Mb | £400.00 |
| 486 PC Expansion Card 4Mb | £555.00 |
| Parallel SCSI adaptor | £45.00 |
| RemoteFS | £45.00 |

## Standard Monitors

| | |
|---|---|
| Acorn Colour | £199.00 |

All monitors come with free lead. State type of computer when ordering.

## Multiscan Monitors

| | |
|---|---|
| Acorn Multiscan AKF18 | £299.00 |
| Taxan 795 Multivision | £449.00 |

## Floppy Disc Drives

| | |
|---|---|
| 5.25" Single 40/80 no psu | £95.00 |
| 5.25" Single 40/80 with psu | £109.00 |
| 5.25" Dual 40/80 no psu | £185.00 |
| 5.25" Dual 40/80 with psu | £199.00 |
| 3.5" Single with psu | £85.00 |
| 3.5" + 5.25" 40/80 with psu | £209.00 |

## Printers

| | |
|---|---|
| Canon Bubblejet BJ-10sx | £175.00 |
| Canon BJ10ex inc. turbo driver | £215.00 |
| Sheetfeeder for BJ-10ex | £48.00 |
| Canon BJ200 | £279.00 |
| Canon BJ200 inc. turbo driver | £309.00 |
| Canon BJ230 | £309.00 |
| Canon BJC800 (col.) inc. s/w | £1469.00 |
| Citizen 120D+ | £114.00 |
| Citizen Swift 9 | £169.00 |
| Citizen Swift 240 | £239.00 |
| Colour Kit for above | £29.00 |
| Citizen Swift 200 | £199.00 |
| Citizen Swift 200 Colour | £225.00 |
| Citizen Swift 128K Memory | £35.00 |
| HP DeskJet 550C | £489.00 |
| Laser Direct (LBP4 Hi Res.) | £849.00 |
| Laser Direct (LBP8 Hi Res.) | £1279.00 |

## Econet

| | |
|---|---|
| Level 4 AUN Software | £399.00 |

## Scanners

| | |
|---|---|
| Flatbed A4 256 Grey SCSI (CC) | £745.00 |
| Flatbed A4 without SCSI card | £585.00 |
| Scan Junior Scanner 256 | £199.00 |
| Scanlight Senior Scanner A4 | £289.00 |
| Sheet Feeder for above A4 | £135.00 |

## Fax

| | |
|---|---|
| Fax Pack (CC) | £259.00 |

# FREE

## Acorn - 3 Years On Site Warranty on all Acorn Hardware* purchased from Dabhand Computing

*excludes Acorn Purchase Schemes / Education Schemes A4 Portable / Acorn Printer

## Printer Drivers

**Midnight Graphics**

| | |
|---|---|
| Citizen Swift 9 Sprite Dump | £26.04 |
| Citizen Swift 24 Sprite Dump | £26.04 |
| Epson 24 Sprite Dump | £26.04 |
| HP Deskjet 500C Sprite Dump | £26.04 |
| HP Paintjet Sprite Dump | £26.04 |
| Integrex 132 Sprite Dump | £26.04 |
| Integrex Colourcel Sprite Dump | £26.04 |
| Juki 5520 Sprite Dump | £26.04 |
| Star LC10 Sprite Dump | £26.04 |
| Star XB24 Sprite Dump | £26.04 |
| Star LC200 Sprite Dump | £26.04 |
| Star LC24-200 Sprite Dump | £26.04 |

**Ace Computing**

| | |
|---|---|
| Printer JX (Colour Dot Matrix) | £14.00 |
| Printer DJ (Deskjet 500C) | £14.00 |
| Printer PJ (Paintjet) | £14.00 |
| PRO Drivers (All) | £40.00 |

**Beebug**

| | |
|---|---|
| Deskjet 500/550C Driver | £15.00 |
| Star/Epson/Citizen (Colour) | £15.00 |

**Electronic Font Foundry**

| | |
|---|---|
| BubbleJet - BJ10e/130e | £10.00 |

## Cables

| | |
|---|---|
| Arc - 15 Pin to 9 Pin Adaptors | £9.95 |
| Arc - Monitor - 8833 inc sound | £8.65 |
| Arc - Monitor - 8833 II inc sound | £8.65 |
| Arc - Parallel Printer Cable | £5.00 |
| Keyboard Extender 400/500 | £7.50 |
| Mouse Extender | £7.50 |

## BBC Software

| | |
|---|---|
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| Blob 2 | £18.00 |
| Chick Chase (80 Track Only) | £15.00 |
| E-Type | £13.00 |
| Master Break | £10.39 |
| Modem Master | £11.26 |
| Play it Again Sam No's 1 - 16 ea. | £11.95 |
| Reversals (80 Track Only) | £20.00 |
| UIM | £14.95 |
| Where's Blob | £18.00 |

## Master Compact

| | |
|---|---|
| Play It Again Sam No's 1 - 16 ea. | £13.00 |
| UIM | £14.95 |

## Archimedes Software

**4 Mation**

| | |
|---|---|
| Chameleon | £35.00 |
| Desktop Basic Editor | £25.00 |
| Jiglet | £25.00 |
| Jigsaw | £27.00 |
| Noot | £50.00 |
| Poster | £75.00 |
| SmArt | £50.00 |
| SmArtFiler | £32.00 |
| Snippet | £35.00 |
| Vector | £75.00 |

**Ace Computing**

| | |
|---|---|
| ArcLight | £40.00 |
| Euclid 2 | £40.00 |
| Mogul | £17.00 |
| Splice | £26.00 |
| Tween | £26.00 |

**Acorn Computers**

| | |
|---|---|
| 1st Word Plus | £65.00 |
| Advance | £88.00 |
| Desktop Assembler (V 2) | £119.00 |
| Desktop C (V 4) | £180.00 |
| Font Starter Pack | £39.00 |
| Newhall Font Pack | £39.00 |
| PC Emulator / Free Shareware | £95.00 |
| TCP/IP Programers Pack | £50.00 |
| TCP/IP Protocol Suite | £199.00 |

**Beebug**

| | |
|---|---|
| DeskEdit 2 | £25.00 |
| Desktop Thesaurus | £19.00 |
| Hard Disc Companion 2 | £45.00 |
| Hearsay II | £69.00 |
| Masterfile 3 | £46.00 |
| Ovation | £85.00 |
| Playback | £17.00 |

**Brilliant Computing**

| | |
|---|---|
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| Streetwise | £20.00 |
| Switch On | £20.00 |
| Switch On Actions | £20.00 |
| Teds Adventures | £20.00 |

**Clares Micro Supplies**

| | |
|---|---|
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| Fervour | £19.00 |
| Illusionist | £79.00 |
| Interdictor | £10.00 |
| Interdictor II | £23.00 |
| ProArtisan 2 | £110.00 |
| Render Bender 2 | £99.00 |
| Rhapsody 2 | £45.00 |
| Schema | £90.00 |
| Topographer | £63.00 |

**Colton Software**

| | |
|---|---|
| Pipedream 3 | £73.00 |
| Pipedream 4 | £124.00 |
| Wordz | £88.00 |

**Computer Concepts**

| | |
|---|---|
| AvanteGarde Font Pack | £24.00 |
| ArtWorks | £124.00 |
| Bookman Font Pack | £24.00 |

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## HANDS ON



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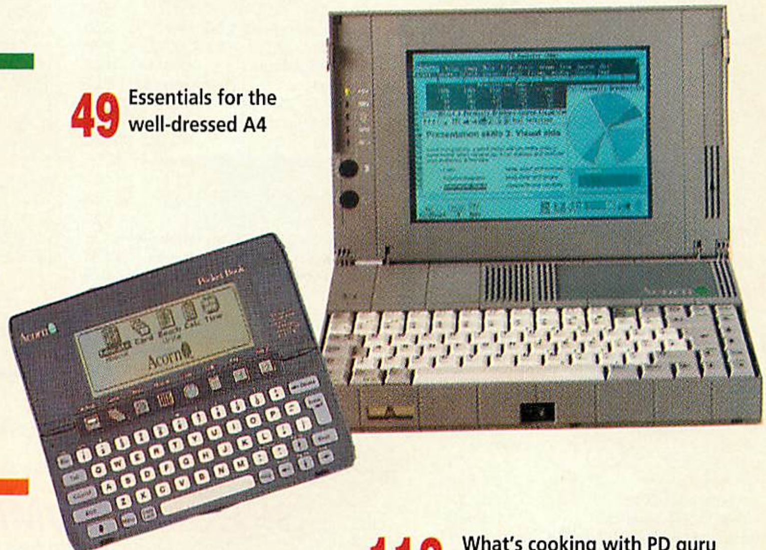
# SEPTEMBER 1993

## FEATURES



## REVIEWS





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## Editor's letter

We can go on for hours about applications, but how do you view them through the eyes of a ten-year-old? Simple. You get a panel of kids to review them. Read their conclusions in Kids Lab. We select clip art for every need and Graham Bell shows you how to squeeze more storage from your machine. Among reviews jostling for space we have a package to satisfy aspiring Patrick Moores, a swimming tutor (you don't take it in the pool with you) and the long-awaited Risc OS 3 Programmer's Reference Manuals. Plus the latest news on Acorn World and some killer games.

Karen Dunaphay

**EXCLUSIVELY PRODUCED ON ACORN MACHINES**
All the editorial pages in *BBC Acorn User* are produced using Acorn computers, Computer Concepts' *Impression 2*, LaserDirect printers and Taxan monitors

# ICS

**051-625 1006**

## SOFTWARE

AUGUST 1993

## SPECIAL SUMMER OFFERS!

***Valid while stocks last or until further notice***

| Title | Publisher | Price |
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| 10 out of 10 | *10 out of 10* | |
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| 2067 BC + Entropy | *Oregan* | £26 |
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| – Welsh Secondary, KS3,4 | *ESM* | £78 |
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| Bug Hunter in Space | *Minerva* | £10 |
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| C (new edition) | *Dabs* | V0 £16 |
| – with disc | | £24 |
| CableNews | *Lingenuity* | £136 |
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| CNC Designer V3 for Lathe and Miller | *TechSoft* | £493 |
| CNC Designer V3 for Miller | *TechSoft* | £343 |
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| ColourSep Starter Packs | *ICS* | |
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| – site licence | | £115 |
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| DTP Graphics combined | *Micro Studio* | £25 |
| DTP Seeds | *4mation* | V0 £8 |
| Dungeon | *Fourth Dim* | £26 |
| Easiword v2, KS2-4 | *Minerva* | £45 |
| EasiWriter 2 | *Icon* | £115 |
| – Dictionaries: Danish / Dutch / French / German / Italian / Norwegian / Spanish / Swedish / Swiss German /Welsh | each | £30 |
| Ego: Repton 4 | *Superior* | £18 |
| Einstein | *Ace* | £106 |
| Elite | *Hybrid* | £32 |
| EluciData (OCR) | *Irlam* | £155 |
| – bought with Irlam Scanner | | £79 |
| Enter the Realm | *Fourth Dim* | £18 |
| E-numix | *CIS* | £21 |
| Equasor | *CC* | £37 |
| Ethnic Borders | *4mation* | £10 |
| E-Type Comper | *Fourth Dim* | £18 |
| Euclid | *Ace* | £55 |
| **Eureka** version 2 | *Longman* | **£82** |
| ExcellonDrill | *Silicon* | £63 |
| Express | *Midnight* | £45 |
| Eye for Spelling, KS1,2 | *ESM* | £32 |
| Family Favourites (not OS 3) | *Minerva* | £11 |
| Farmer Giles | *Computer Tutorial* | £16 |
| Farmer Giles II | *Computer Tutorial* | £17 |
| Fervour | *Clares* | £19 |
| FilmMAKER | *Silicon* | £63 |
| – education price | | £49 |
| Find It! | *Appian* | £29 |
| Fireball II Xtra | *CIS* | £9 |
| First Impression | *Word Processing* | V0 £28 |
| First Logo | *Longman* | £22 |
| First Words and Pictures | *Chalksoft* | £21 |
| Flare | *Silica* | £22 |
| Flexifile, KS3,4 | *Minerva* | £75 |
| Flight Path, age 9+ | *Storm* | £27 |
| Flight Sim Toolkit | *Simis* | £31 |
| Fontasy | *ICS* | £15 |
| – site licence | | £45 |
| Fontasy / DrawBender / Placard | *ICS* | £30 |
| – site licence | | £80 |
| Font Directory | *Look* | £28 |
| FontFX | *Data Store* | £9 |
| – site licence | | £70 |
| Font Pack – Newhall, Starter, Symbol – each pack | *Acorn* | £35 |
| Font Pack 1 – Paladin, Swiss B, Symbol B, Vogue | *RISC* | £47 |
| Font Pack – Avant Garde, Bookman Pembroke – each pack | *CC* | £24 |
| Food for Thought, age 7-16 | *Sherston* | £16 |
| Freddy's Folly (not OS 3) | *Minerva* | £8 |
| Freddy Teddy | *Topologika* | £18 |
| – Balloons & The Zoo | *Topologika* | £27 |
| – The Playground | *Topologika* | £27 |
| – The Puddle & The Wardrobe | *Topologika* | £27 |
| Freddy Teddy's Adventure | *Topologika* | £18 |
| Fun School 2 | *Europress* | |
| – age -6, age 6-8, age 8+ | each | £17 |
| Fun School 3 | *Europress* | |
| – age -5, age 5-7, age 8+ | each | £18 |
| Fun School 4 | *Europress* | |
| – age -5, age 5-7, age 7-11 | each | £18 |
| Galactic Dan | *Fourth Dim* | £19 |
| GuardianPro | *Digital Phenomena* | £14 |
| Genesis II | *Oak* | £99 |
| Genesis Plus | *Oak* | £65 |
| Genesis Script Language | *Oak* | V0 £15 |
| GenIndex | *Oak* | £39 |
| GerberPlot | *Silicon* | £63 |
| Giant Killer, age 10+ | *Topologika* | £29 |
| Giant Killer Support Disc | *Topologika* | £24 |
| Glimpse | *Sherston* | £10 |
| Gods | *Krisalis* | £19 |
| Good Impression | *Word Processing* | V0 £25 |
| Granny's Garden | *4mation* | £23 |
| Granny's Garden Resource Pack | *4mation* | £15 |
| GraphBox | *Minerva* | £57 |
| GraphBox Professional | *Minerva* | £104 |
| Graphics on the ARM Machines | *Dabs* | V0 £15 |
| Graph_IT | *Sherston* | £19 |
| Greetings Graphics, draw/sprites | *Micro Studio* | £16 |
| Gribbly's Day Out | *Coin-Age* | £19 |
| GridIT | *Widgit* | £30 |
| Grievous Bodily 'ARM | *Fourth Dim* | £18 |
| Guile | *Dream* | £24 |
| Hard Disc Companion | *RISC* | £45 |
| Hearsay II | *RISC* | £69 |
| HelixBasic | *PDK* | £79 |
| !Help 3, age 13+ | *Sherston* | V0 £11 |
| HeroQuest | *Krisalis* | £24 |
| Hilighter, age 8-16 | *Sherston* | £32 |
| History Costume, sprites | *Micro Studio* | £16 |
| Holed Out Compendium | *Fourth Dim* | £18 |
| Home Accounts | *Minerva* | £34 |
| House of Numbers | *Chalksoft* | £20 |
| Hoverbod (not OS 3) | *Minerva* | £11 |
| Humanoids/Robotix | *CIS* | £21 |
| Ibix the Viking (not OS 3) | *Minerva* | £11 |
| I²C SWI | *Baildon* | £15 |
| – bought with Oddule | | £5 |
| Illusionist | *Clares* | £69 |
| Illustrators' Graphics, draw/sprites | *Micro Studio* | £16 |
| Image Animator | *Iota* | £68 |
| Image OCR | *Iota* | £POA |
| Image Outliner | *Iota* | £72 |
| Imagery | *Palette Studio* | £70 |
| Imagine Version 2 | *Topologika* | £44 |
| Impact! | *Circle* | £47 |
| Impact! Demo | *Circle* | £2 |
| **Impression** | *CC* | **£123** |
| – network version | | £650 |
| – site licence | | £545 |
| – extra hardware key for sites only | | £15 |
| – extra manual for sites only | | V0 £8 |
| Impression | *Dabs* | V0 £14 |
| – with disc | | £17 |
| Impression Borders | *CC* | £19 |
| Impression Business Supplement | *CC* | £39 |
| Impression Junior | *CC* | £65 |
| – site licence | | £435 |
| – extra manual for sites only | | V0 £7 |
| Insight | *Longman* | £68 |
| Instigator | *Dabs* | £39 |
| Interdictor 2 | *Clares* | £26 |
| IronLord | *UBI Soft* | £14 |
| Isle of Wight | *Computer Tutorial* | £20 |
| Ixion | *Software 42* | £21 |
| James Pond | *Krisalis* | £19 |
| Jet Fighter | *Minerva* | £10 |
| Jiglet | *4mation* | £19 |
| Jigsaw | *4mation* | £19 |
| Junior Database | *Iota* | £45 |
| Junior PinPoint | *Longman* | £23 |
| Karma | *Periscope* | £20 |
| Keyboard Player | *Chalksoft* | £17 |
| Keylink Prolog | *Keylink* | £69 |
| KiddiCad | *Oak* | £59 |
| Kid Pix, KS1,2 | *ESM* | £35 |
| Killerbugs | *CIS* | £21 |
| Knowledge Organiser 2 | *Clares* | £79 |
| Krisalis Collection | *Krisalis* | £21 |
| LabelBase | *Digital Phenomena* | £49 |
| Landmarks – Aztecs, Civil War, Columbus, Egypt, Elizabeth I, Rain Forest, Second World War / Victorians each | *Longman* | £18 |
| Last Days of Doom & Hezarin | *Topologika* | £17 |
| Last Ninja | *Superior* | £19 |
| Lemmings | *Krisalis* | £19 |
| Letters and Pictures | *Chalksoft* | £20 |
| Lexicon – French, German –each | *Stallion* | £48 |
| Lexicon – Russian | *Stallion* | £56 |
| Limpets | *Computer Tutorial* | £17 |
| Linkword – French, German, Spanish – each | *Minerva* | £37 |
| Little Red Riding Hood, age 5-8 | *Selective* | £14 |
| Logo | *Longman* | £55 |
| LogoPlotter | *Longman* | £20 |
| Lotus Turbo Challenge 2 | *Krisalis* | £19 |
| Maddingly Hall | *Minerva* | £8 |
| Magpie | *Longman* | £40 |
| Mah-Jong European – The Game | *CIS* | £19 |
| Mah-Jong Patience | *CIS* | £19 |
| Manchester United Europe | *Krisalis* | £19 |
| Maps and Landscapes 1 | *Chalksoft* | £19 |
| Maps and Landscapes 2 | *Chalksoft* | £19 |
| Mark Master | *Chalksoft* | £67 |
| Master Break | *Superior* | £14 |
| Masterfile (Version 3) | *RISC* | £46 |
| Maths Sieve | *Computer Tutorial* | £16 |
| Mazes, drawfiles | *Micro Studio* | £16 |
| Memory Magic | *CIS* | £12 |
| Mental Maths | *CIS* | £16 |

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| MicroDrive 2 | CIS | £25 |
| MicroDrive Designer | CIS | £25 |
| Micro Music | Fisher-Marriott | £19 |
| MicroSpell 3.XX | David Pilling | £5 |
| MicroStudio, age 7+ | EMR | £67 |
| Micro Trader Accounts | PRES | £270 |
| MiG-29 Fulcrum | Domark | £24 |
| Military History, sprites | Micro Studio | £16 |
| Minotaur | Minerva | £8 |
| Missile Control | Minerva | £8 |
| Mogul | Ace | £26 |
| Money Matters | Triple R | £15 |
| Movaword | Chalksoft | £17 |
| MultiFS | Arxe | £27 |
| Multistore, KS3,4 | Minerva | £125 |
| Myth of Moby Dick | Toppologika | £27 |
| **N**ature Graphics, draw/sprites | Micro Studio | £16 |
| Naughty Stories (set of 6) | Sherston | £48 |
| Navigator | Topologika | £44 |
| Nebulus | Krisalis | £19 |
| Newton | Longman | £20 |
| Night Sky | Clares | £67 |
| Noddy's Playtime | Jumping Bean | £21 |
| Noot | 4mation | £41 |
| Noot Art Disc | 4mation | £10 |
| Notate | Longman | £42 |
| Note Invaders | Chalksoft | £20 |
| Number 62 Honeypot Lane | Resource | £29 |
| Numbers and Pictures | Chalksoft | £20 |
| Numberscope | Fisher-Marriott | £19 |
| Number Zoo, age 3-6 | Selective | £14 |
| Numerator | Longman | £39 |
| Numerator Chaos | Longman | £18 |
| **O**ak Logic | Oak | £79 |
| Oak PCB | Oak | £79 |
| Oh No! More Lemmings (requires Lemmings) | Krisalis | £15 |
| **Ollie Octopus' Sketchpad** age 4+ | Storm | **£12** |
| **Omar Sharif's Bridge** | Krisalis | **£19** |
| Orion | Minerva | £8 |
| Orrery | Spacetech | £93 |
| Ovation | RISC | £84 |
| Overload | Clares | £13 |
| **P**adlock | ICS | £10 |
| – site licence | | £30 |
| Pandora's Box | Fourth Dim | £18 |
| Pappus | Computer Tutorial | £17 |
| Paradroid 2000 | Coin-Age | £20 |
| Payroll Manager | Silicon | £79 |
| PC Emulator 1.8 | Acorn | £93 |
| PDT | Oak | £149 |
| Pendown | Longman | £46 |
| Pendown Etoiles | Longman | £49 |
| Pendown Outline Fonts | Longman | £19 |
| Pendown Plus | Longman | £68 |
| Personal Accounts | Apricote | £29 |
| Perspectives | TechSoft | £54 |
| Pesky Muskrats | Coin-Age | £19 |
| Phonic Games | Fisher-Marriott | £28 |
| Photopia | CIS | £38 |
| Picture Book | Triple R | £15 |
| Picture It! | Appian | £29 |
| – Topic discs | each | £9 |
| PinPoint | Longman | £65 |
| – site licence | | £390 |
| PipeDream 3 | Colton | £72 |
| PipeDream 4 | Colton | £119 |
| PipeDriver Dot 1 | ICS | £10 |
| Pipe Mania | Empire | £18 |
| Pirate, age 8-14 | Chalksoft | £19 |
| Placard | ICS | £10 |
| – site licence | | £30 |
| Plague Planet | Alpine | £13 |
| PlayBack | RISC | £19 |
| Play It Again Sam 1 | Superior | £20 |
| Plot | Clares | £POA |
| Podd, KS1,2 | ESM | £27 |
| Podd – Welsh, KS1,2 | ESM | £38 |
| Polyominoes | Topologika | £29 |
| Populous | Krisalis | £22 |
| Poster | 4mation | £75 |
| PowerROUTER | Silicon | £159 |
| Prehistoric Animals, sprites | Micro Studio | £16 |
| Premier | Circle | £71 |
| – DataBase | Circle | £25 |
| – WordProc | Circle | £25 |
| Presenter GTi | Lingenuity | £66 |
| PrimeArt, KS1-4 | Minerva | £69 |
| PrimeMover, KS2-4 | Minerva | £75 |
| PrimeSolver, KS1-4 | Minerva | £POA |
| PrimeWord, KS2-4 | Minerva | £55 |
| Printer Drivers, RISC OS: Canon BubbleJet, Canon LBP, Canon PJ1080, ColourCel, Epson JX, Epson ESC-P2, HP, Integrex 132 – each | Ace | £19 |
| Deskjet 500C, Epson / Star colour – each | RISC | £15 |
| ProDrivers: Canon LBP8, Epson ESC-P2, HP Colourjet – each | Ace | £37 |

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| TurboDrivers: Canon, Epson Stylus 800, HP – each | CC | £49 |
| ProArtisan | Clares | £71 |
| ProArtisan 2 | Clares | £POA |
| ProCAD, KS4 | Minerva | £394 |
| Programming in ANSI Standard C on the Archimedes | Sigma | vo £15 |
| Prophet (requires 2 Mb) | Apricote | £153 |
| Prophet Entry Level | Apricote | £10 |
| ProSHEET | Silicon | £39 |
| Protext | Arnor | £117 |
| Provocator | Computer Tutorial | £15 |
| Puncman 1 and 2 | Chalksoft | £16 |
| Puncman 3 and 4 | Chalksoft | £16 |
| Puncman 5 to 7 | Chalksoft | £18 |
| Punctuate | Xavier | £31 |
| Punctuate! | Topologika | £25 |
| **Q**DBug | Leading Edge | £58 |
| Quest for Gold | Krisalis | £19 |
| QuicKey | ICS | £10 |
| – site licence | | £30 |
| **Real McCoy 2** | Fourth Dim | **£22** |
| Real McCoy 3 | Fourth Dim | £23 |
| Real McCoy 4 | Fourth Dim | £27 |
| Recall, age 8-13 | Sherston | £37 |
| Redshift | Minerva | £10 |
| RemoteFS | Atomwide | £48 |
| Render Bender 2 | Clares | £78 |
| Repton 3 | Superior | £20 |
| Resultz | Colton | £POA |
| Revelation 1 | Longman | £39 |
| Revelation 2 | Longman | £75 |
| Revelation 2 CD Rom | Longman | £98 |
| Revelation ImagePro | Longman | £127 |
| Reversals | Chalksoft | £17 |
| Rhapsody 2 | Clares | £45 |
| Rhapsody 3 | Clares | £79 |
| Rhythm-Bed | Clares | £39 |
| RhythmBox II, age 8+ | EMR | £34 |
| RiscBASIC Compiler | Silicon | £79 |
| RiscForth Compiler | Silicon | £79 |
| Risc OS 3 First Steps | Dabs | vo £POA |
| Risc OS 3 Programmer's Reference Manual | Acorn | vo £99 |
| Risc OS Companion Vol 1 | Oak | vo £49 |
| Risc OS Extras 1992 | Acorn | £9 |
| Risc OS Style Guide | Acorn | vo £12 |
| RoboLogo | Silicon | £39 |
| Round the World Yacht Race, age 9+ | Storm | £27 |
| **S**aloon Cars Deluxe | Fourth Dim | £25 |
| – Deluxe Extra Courses | Fourth Dim | £16 |
| **S-Base Developer** | Longman | **£150** |
| S-Base Developer Plus | Longman | £275 |
| S-Base Network | Longman | £275 |
| **S-Base Personal** | Longman | **£79** |
| Schema | Clares | £95 |
| Schema 2 | Clares | £POA |
| Science, drawfiles | Micro Studio | £25 |
| Score Draw | Clares | £44 |
| Scorewriter PMS Desktop, age 12+ | EMR | £147 |
| ScreenPlay | Widgit | £35 |
| ScreenTurtle version 2 | Topologika | £54 |
| Search and Rescue, age 9+ | Storm | £27 |
| Seashore Guide, drawfiles | Micro Studio | £16 |
| Seelinks – Ourselves, KS1,2 | ESM | £27 |
| Seelinks – Pond Watch, KS2 | ESM | £35 |
| Seelinks – Tourism, KS3 | ESM | £35 |
| Seelinks – Transport, KS2 | ESM | £35 |
| Serenade | Clares | £106 |
| Serpents | CIS | £16 |
| Settlement, KS3 | ESM | £31 |
| ShapeFX | Data Store | £10 |
| ShareHolder | Silicon | £106 |
| ShareHolder Professional | Silicon | £164 |
| ShowPage | CC | £145 |
| Shylock Gnomes, age 10-15 | Selective | £16 |
| Sim City | Krisalis | £24 |
| SkyHunter | Longman | £22 |
| Sleuth | RISC | £POA |
| smArt | 4mation | £50 |
| smArt Aliens, Animals, Dinosaurs, Egypt, Europe*, Faces*, Fantasy, Fashion, Fiddles & Drums, Heraldry, Homes*, Leisure*, Look Smart, Smartoons, Trees and Gardens *Please specify English, French, German, Spanish or Welsh – each | 4mation | £15 |
| smArt Filer | 4mation | £32 |
| smArt Modern Languages | 4mation | £19 |
| Smudge the Spaniel, age 4-8 | Storm | £20 |
| Snippet (new version) | 4mation | £32 |
| Soapbox | Xavier | £34 |
| SolidCAD | Silicon | £79 |
| SolidsRender | Silicon | £79 |
| SolidTools | Silicon | £234 |
| – education price | | £194 |
| SongBook, age 3-10 | EMR | £24 |
| Sound Engineer, age 12+ | EMR | £59 |
| Sound FX Maker | CIS | £31 |
| Sounds & Rhymes | Xavier | £29 |
| Spark | David Pilling | £5 |

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| SparkFS | David Pilling | £20 |
| Sparkle | Morley | £59 |
| Special | ICS | £10 |
| – site licence | | £30 |
| **Speech!** | Superior | **£17** |
| Spelling week-by-week | Chalksoft | £21 |
| Spex | ExpLAN | £98 |
| Spheres of Chaos | Matt Black | £19 |
| Splash, age 7-11 | Sherston | £19 |
| Splice | Ace | £34 |
| Split an Image, age 7-16 | Sherston | £16 |
| Spoken Word | Wyddfa | £16 |
| Spooler | Computer Tutorial | £9 |
| Sporting Triangles | CDS | £19 |
| SportsDay | Selective | £22 |
| SportsPeople | Selective | £22 |
| SpriteEd | Computer Tutorial | £17 |
| SpySnatcher | Topologika | £12 |
| Square Route | Computer Eyes | £16 |
| Starspell Plus | Fisher-Marriott | £19 |
| StartWrite | Icon | £55 |
| StockPack | Topologika | £37 |
| StoryBook, age 3-10 | EMR | £59 |
| StrongED | Stallion | £22 |
| Studio24Plus Version 2, age 11+ | EMR | £149 |
| Studio24Plus Version 3, age 12+ | EMR | £210 |
| Stunt Racer | Fourth | £25 |
| SUMthing | Resource | £19 |
| SuperDump | Silicon | £20 |
| Superior Golf | Superior | £14 |
| SuperPlot | Silicon | £20 |
| Supersounds | CIS | £15 |
| Supersounds 2 | CIS | £15 |
| Swiv | Krisalis | £19 |
| **T**ABS | ExpLAN | £95 |
| Talisman | Minerva | £8 |
| Talking Pendown | Longman | £58 |
| Talking Pictures | Wyddfa | £16 |
| Target Maths | Triple R | £15 |
| Technodream (Nevryon 2) | Superior | £20 |
| TechWriter | Icon | £159 |
| Thinklink | Xavier | £29 |
| ThinkSheet | Fisher-Marriott | £38 |
| Thundermonk | Minerva | £11 |
| Tiles | Brain Games | £16 |
| Timeshare | Fisher-Marriott | £19 |
| Timetabler | Minerva | £549 |
| Time Traveller, KS2 | ESM | £37 |
| – Britain Since the 1930s, KS2 | | £30 |
| – Expansion, Trade and Industry, KS3 | | £36 |
| – Making of the United Kingdom, KS3 | | £39 |
| – Medieval Realms, KS3 | | £36 |
| – The Victorians, KS2 | | £30 |
| TinyDraw/TinyPuzzle | Topologika | £34 |
| TinyPuzzle | Topologika | £24 |
| Titler | Clares | £119 |
| Toolkit Plus | Clares | £36 |
| Tools Graphics, drawfiles | Micro Studio | £23 |
| Topographer | Clares | £63 |
| Touch Type | Iota | £39 |
| Tower of Babel | Cygnus | £17 |
| Trace | David Pilling | £5 |
| Tracer | Midnight | £46 |
| Tracker | Leading Edge | £37 |
| Transport, drawfiles | Micro Studio | £25 |
| Turbo Type | CIS | £20 |
| Tween | Ace | £35 |
| Twin | Acorn | £24 |
| Twin World | UBI Soft | £14 |
| TWO (Task and Window Organiser) | ICS | £10 |
| – site licence | | £30 |
| TypeStudio | RISC | £39 |
| **U**tility Disc 1 | Data Store | £8 |
| Utility Disc 2 | Data Store | £13 |
| Utility Disc 3 | Data Store | £7 |
| Utility Collection | Data Store | £21 |
| **V**ector | 4mation | £75 |
| View»Mac 3 | Human | £65 |
| – Arc/Mac Cable | Human | £24 |
| Viewpoints, age 7-11 | Sherston | £37 |
| Virtual Golf | Fourth Dim | £25 |
| Visual Backup | Dabhand | £42 |
| Vox Box | Clares | £46 |
| **W**aterloo (not OS 3.1) | Turcan | £19 |
| Whale Facts | Topologika | £34 |
| Wordbank | Topologika | £25 |
| Words and Pictures | Chalksoft | £18 |
| WordWorks | CC | £38 |
| Wordz | Colton | £89 |
| World Geography Maps, draw | Micro Studio | £23 |
| WorldMaker, KS3,4 | ESM | £57 |
| World Map Study, KS3,4 | ESM | £67 |
| Worldscape | Leading Edge | £17 |
| World Wildlife, sprites | Micro Studio | £16 |
| Worra Battle | Oak | £15 |
| WorraCAD | Oak | £79 |
| **Y**acht 2 | Computer Tutorial | £49 |
| Yacht 7 | Computer Tutorial | £94 |
| **Z**arch | Superior | £14 |
| Zelanites (not OS 3) | Micro Power | £15 |
| Zool | Gremlin | £20 |

# ICS

## 051-625 1006

## HARDWARE

### I²C PRODUCTS . . .

| | | |
|---|---|---|
| AnDi Oddule | Baildon | £39 |
| I²C Adaptor (needed unless you already have an I²C socket) | Baildon | £10 |
| I²C SWI (enhanced IIC_Control) | Baildon | £15 |
| – bought with Oddule | | £5 |

### SCANNERS, DIGITISERS . . .

| | | |
|---|---|---|
| ArcScanner including Epson GT-4000 | Clares | £1660 |
| Colour Converter | Lindis | £145 |
| FaxScan | Spacetech | £94 |
| GreyHawk | Wild Vision | £98 |
| Handipad | TechSoft | £173 |
| Hawk V9 MkII | Wild Vision | |
| – standard | | £199 |
| – hardware dithered | | £259 |
| HiVision Digitiser Colour | HCCS | |
| – A3000 External | | £137 |
| – A3000 Series / A4000 Internal | | £124 |
| – A5000 / 300 / 400 | | £124 |
| iMage (Sharp JX-100) | Irlam | |
| – for A5000 | | £490 |
| – for other computers | | £589 |
| Image Scanner | Iota | £383 |
| – Colour Upgrade Kit | Iota | £239 |
| – Fast Parallel Card | Iota | £98 |
| i-Scan 200 | Irlam | £539 |
| i-Scan 400 | Irlam | £589 |
| Pineapple Colour Video Digitiser | Pineapple | £195 |
| – A3000 boxed | Pineapple | £230 |
| ProImage (Epson GT6000) | Irlam | |
| – for A5000 | | £989 |
| – for other computers | | £1089 |
| Scan-Light A4 | CC | £277 |
| – with Sheet Feeder | CC | £360 |
| Scan-Light 256 | CC | £190 |
| – A3000 internal | CC | £190 |
| Scan-Light Professional | CC | £565 |
| – as above + SCSI interface | CC | £699 |
| SnapShot Colour Video Digitiser | Lingenuity | £195 |
| – A3000 version | Lingenuity | £275 |
| Spectra | RISC | |
| – Archimedes / A5000 | | £545 |
| – A3000 Series / A4000 Internal | | £545 |
| – A3000 External | | £555 |
| Vision Digitiser | HCCS | |
| – A5000 / 300 / 400 Mono | | £48 |
| – A5000 / 300 / 400 Colour | | £76 |
| – A3000 External Mono | | £60 |
| – A3000 External Colour | | £89 |
| – A3000 Series /A4000 Internal Mono | | £48 |
| – A3000 Series / A4000 Internal Colour | | £76 |

### MEMORY . . .

*Fitting extra unless otherwise stated*
*† Fitting fairly easy ‡ Fitting needs expertise*

| | | |
|---|---|---|
| A3000 2 Mb Upgradable † | Atomwide/IFEL | £43 |
| A3000 4 Mb † | Atomwide/IFEL | £100 |
| **A3010 1-2 Mb** | | **£29** |
| A3020 / A4000 2-4 Mb † | IFEL | £55 |
| A310 2 Mb Upgradable soldered ‡ | IFEL | £88 |
| – as above + MEMC1a | | £113 |
| – as above + MEMC1a + fitting | | £143 |
| A310 4 Mb soldered + MEMC1a ‡ | IFEL | £152 |
| – as above + fitting | | £182 |
| A5000 2-4 Mb Non-upgradable † | Atomwide | £85 |
| A5000 2-4 Mb Upgradable † | Atomwide | £99 |
| A5000 2-8 Mb including fitting | Atomwide | £500 |
| A5000 4-8 Mb including fitting | Atomwide | £391 |
| A540 4 Mb † | Acorn | £238 |

### PRINTERS . . .

| | | |
|---|---|---|
| ArcLaser 300-6 | Calligraph | £895 |
| ArcServer 300-8 | Calligraph | £985 |
| Bubble Jet BJ-10sx | Canon | £187 |
| Bubble Jet BJ-10sx + TurboDriver | Canon/CC | £219 |
| Bubble Jet BJ-200 | Canon | £282 |

*For ordering details please turn to page 3*

# ICS

**051-625 1006**

| | | |
|---|---|---|
| Bubble Jet BJ-230 | *Canon* | £315 |
| Bubble Jet BJ-300 | *Canon* | £325 |
| Bubble Jet BJ-330 | *Canon* | £380 |
| Bubble Jet BJC-800 + TurboDriver | *Canon/CC* | £1374 |
| DeskJet 510 | *Hewlett-Packard* | £275 |
| DeskJet 500C | *Hewlett-Packard* | £375 |
| DeskJet 550C | *Hewlett-Packard* | £525 |
| Laser Direct HiRes4 | *CC* | £899 |
| – 250-sheet Paper Cassette | | £99 |
| Laser Direct HiRes8 | *CC* | £1275 |
| Laser Direct HiRes Board | *CC* | £325 |
| Refill toner cartridge for Canon EPS | | £50 |
| New toner cartridge for Canon LBP-4 | | £59 |

## COMPUTERS . . .

| | | |
|---|---|---|
| A3010 1MB FD Family Solution | *Acorn* | £420 |
| A3010 2MB FD Learning Curve with Monitor | *Acorn* | £675 |
| – as above + JP150 Printer | | £889 |
| A3020 2MB FD | *Acorn* | £749 |
| A3020 2MB HD60 | *Acorn* | £899 |
| A4 2MB FD | *Acorn* | £1395 |
| A4 4MB HD60 | *Acorn* | £1695 |
| A4 4MB HD80 | *Acorn* | £1699 |
| A4 4MB HD120 | *Acorn* | £1799 |
| A4 Extra Battery Pack | *Acorn* | £50 |
| A4 Shoulder Bag | *Acorn* | £35 |
| A4000 2MB HD80 | *Acorn* | £945 |
| – as above + Home Office | | £995 |
| A5000 2MB HD80 Multiscan | *Acorn* | £1395 |
| – as above + Learning Curve | | £1455 |
| Pocket Book | *Acorn* | £212 |

## MISCELLANEOUS. . .

| | | |
|---|---|---|
| 386 PC Expansion Card 25 MHz | *Aleph One* | |
| – 1 Mb | | £374 |
| – 4 Mb | | £468 |
| 486 PC Expansion Card | *Aleph One* | |
| – 1 Mb | | £463 |
| – 4 Mb | | £557 |
| 4-slot 4-layer Backplane | *IFEL* | £52 |
| A300/400 Fan kit | *ICS* | £15 |
| A3000 Expansion Box | *Wild Vision* | £135 |
| A310 RISC OS Carrier Board ‡ | *IFEL* | £18 |
| A5000 Fitting Kit for second hard disc | *ICS* | £15 |
| Arckey Function KeyStrip Holder | *ICS* | VO £3 |
| – pack of 4 | | VO £10 |
| ArcNET | *ACS* | £69 |
| ARM3 ‡ | *Aleph One/IFEL* | £165 |
| ColourBurst | *State* | £395 |
| ColourCard | *CC* | £225 |
| – A3000 External | *CC* | £225 |
| Dongle Dangle with screw fittings | *ICS* | £6 |
| Fan filters (pack of 10) (not A5000) | *ICS* | £6 |
| FaxPack | *CC* | £289 |
| Floppy Discs, 10 × 3½" High Density | | £10 |
| G16 True Colour Card | *State* | £258 |
| G8 Plus Accelerator | *State* | £238 |
| HiPoint Mouse for A4 | *Genius* | £49 |
| Microlin fx Pocket Fax Modem | *Pace* | £179 |
| Micro Mouse | *Clares* | £26 |
| Monitor Stand for A3000 | *ICS* | £21 |
| Mono/SCSI | *Atomwide* | £48 |
| Podule Case for A3000 | *HCCS* | £16 |
| Printer/SCSI | *Atomwide* | £74 |
| Printer Port Sampler | *Leading Edge* | £42 |
| Publishing Pack | *CC* | £475 |
| RISC OS 3 Upgrade | *Acorn* | £42 |
| – Bulk package | *Acorn* | £335 |
| – A5000 | *Acorn* | £19 |
| Seal 'n Type spill-proof Keyboard Covers | | |
| – Archimedes / A5000 | *Kador* | £14 |
| – A3000 | *Kador* | £14 |
| TouchWindow | *Lindis* | £234 |
| Whisper Fan Quietener (for A300/A400 series only) | *ICS* | £15 |
| Wizzo IDE Filing System on rom | *ICS* | |
| – Wizzo4 for A4 | | £29 |
| – Wizzo5 for A5000 | | £29 |

*"You wonder how you ever managed without QuicKey."*
**NOW ONLY £10**

*"Congratulations on ColourSep! The results, compared with the drivers currently available, are bordering on the fantastic."*
**NOW ONLY £15**




*"TWO is the best thing I've ever bought."*
**NOW ONLY £10**

*As well as letting you type all those extra characters, Special is the easiest way to examine new fonts.*

*"DrawBender is quite stunning."*
**NOW ONLY £10**

*Padlock is our top seller for simple disc security.*

*"Fontasy offers a wider range of effects than FontFX. It is a package for the perfectionist, whether professional or enthusiast."*
**NOW ONLY £15**

## HOW TO ORDER

**VAT:** Zero-rated items are marked V0. UK customers please add 17.5% to all other prices. EC customers outside the UK (including BFPO) please do the same unless you are VAT registered, in which case quote your international VAT number. Ours is GB 595 7258 84.

***CARRIAGE IS FREE WITHIN MAINLAND UK IF YOU PAY ON ORDERING.***

**Overseas carriage:** If you are paying by credit card we will add airmail and insurance at cost. Otherwise please add £6 (Europe) or at least £12 (elsewhere) for each software item and send a pounds sterling bank draft payable at a London clearing bank, or Eurocheques for not more than £100 each.

**Credit cards** are welcome. We do not charge your account until your order is fulfilled. Your name and address must be as known to the credit card company. If you are leaving an order on our answering machine please include your telephone number, the expiry date of your card, and your calculation of the total payment due. We will make no charge for credit card commission unless we have informed you first.

**Official orders** are welcome from UK government and educational institutions. Payment is due in 14 days. Invoices are subject to carriage and late payment charges.

**Site licences** are available for most products. Please check our prices.

All products, prices and specifications are offered in good faith and are subject to change without notice. We process all orders immediately, but suppliers do sometimes keep us waiting. Goods are guaranteed but we do not supply them on approval. Returns and cancellations can only be accepted by prior agreement and there may be a charge to cover the costs involved.

*AUTHORISED ACORN DEALER*


**ICS (Ian Copestake Limited)**

**Dept B46, 1 Kington road, West Kirby, WIRRAL, Merseyside, L48 5ET**

**Tel: 051-625 1006 Fax: 051-625 1007**


E&OE D61 93JL19

LICENSED CREDIT BROKER

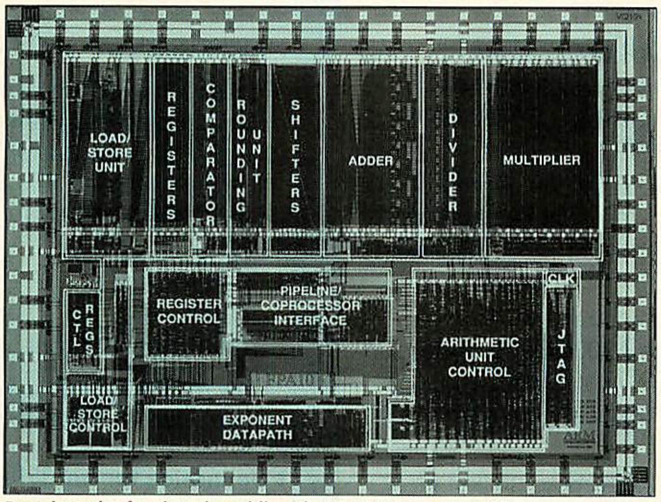
# FPA10 BRINGS FASTER MATHS

**ACORN** and Arm Ltd have finally released the eagerly anticipated FPA10 floating point maths accelerator chip, which can make programs which use floating point instructions run considerably faster. It is attractively priced at £99 + VAT and should be available immediately.

According to Acorn tests, the performance of certain functions in compatible software can be boosted by as much as 50 times. Applications which are likely to benefit from the FPA10 include computationally-intensive programs like spreadsheets, CAD, image analysis, modelling and vector graphics. Double precision calculations have an accuracy to 14 decimal places and extended precision calculations 18 decimal places.

Basic technical details of the FPA10 were published in last month's *Acorn User*. The 26MHz chip, manufactured in the UK by GEC-Plessey Semiconductors, consumes just 250mW of power: between eight and 25% of the power required by similar chips.

Not all applications will be automatically compatible with the FPA10. For example, no Computer Concepts applications use Risc OS floating point library routines. 'Just about all our products, including *Artworks*, use optimised fixed point arithmetic,' commented CC's Charles Moir. He said the FPA10 was good news and the price seemed right.



Burn into the fast lane by adding the FPA10 to your machine

Colton Software's *PipeDream* and *Resultz* spreadsheet applications do use FPA10-compatible routines, though Colton's Rob MacMillan was cautious about how much difference the chip would make. 'We haven't tested the chip yet, but I wonder if it will make a great deal of difference to small spreadsheets,' he said.

Whether software houses will start to produce new products which are fully FPA10-compatible will depend on how many of the chips reach users. Only the A5000 and some A540/R260 models include a socket to take the chip, though a number of companies now offer Arm3 upgrade boards with an FPA10 socket. A540 or R260 users who find their CPU card doesn't have an FPA10 socket can have a modification carried out free of charge. Customers should contact their dealers or Acorn's Customer Services department for further advice.

A 62-page technical booklet covering processor schematics, a programmer's model, the instruction set and implementation details is now available for £10 from Vector Services, 13 Denington Way, Wellingborough, Northants, NN8 2RL.

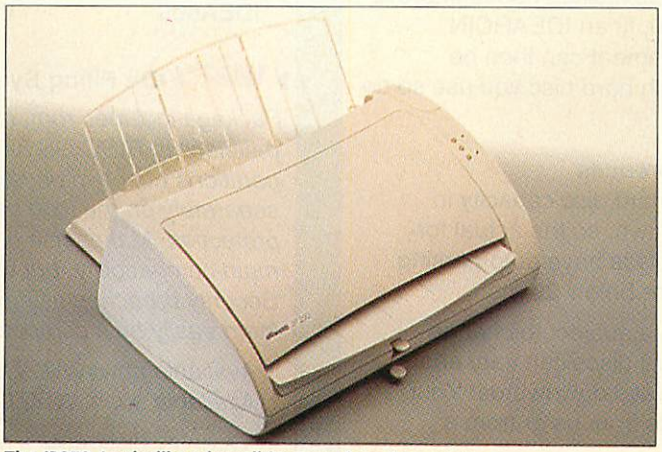
(A full review of the FPA10 will be featured in next month's *Acorn User*.

*Acorn can be contacted on (0223) 254254*

# REVOLUTIONARY OLIVETTI PRINTER

**A NEW** inkjet printer has been produced by Olivetti. The JP250 has a 'revolutionary' new print cartridge claimed to reduce printing costs by up to 40%. With many inkjet printers the print head is attached to the ink reservoir so it is replaced once empty.

The JP250 has a separate ink barrel which can be replaced seven or eight times before the head needs changing. Up to three-pages-per-minute performance is claimed for the JP250 and maximum resolution is near-laser quality 300dpi. The JP250's RRP is £249 + VAT.


The JP250. Looks like a breadbin; saves bread on printing

# O'RIORDAN SPEAKS

**MIKE O'RIORDAN**, Acorn's marketing director, reflected on a number of interesting issues in a speech he made at the annual *Acorn User* lunch.

Addressing concerns that April and May had been slow, O'Riordan revealed Acorn was far from alone, with most education-based suppliers from chalk vendors to book suppliers experiencing the same. By contrast, June trade has accelerated sharply upwards and O'Riordan warned some Acorn lines were out of stock.

He was asked about initiatives in the consumer market, especially as Commodore recently cut the price of its basic A600 Amiga to £199. He replied he was confident the Amiga was no threat to Acorn systems like the A3010 as the A600 was little more than a games machine. O'Riordan also pointed out that Commodore is losing money on a big scale while Acorn has remained in the black. While Acorn remains committed to education, O'Riordan restated Acorn's commitment to the consumer pointing to the autumn Acorn World show.

# FARMS TO FLYERS

**DIXON** and Dixon is a software house, which until now has produced software mainly for the farming industry.

Now the company has brought out an easy-to use-leaflet and flyer printing package for the Archimedes.

*Flyprint* is designed to produce tickets, notes, serial numbers, adverts, raffle tickets and so on,quickly and easily. The program exclusively uses fonts resident in Epson dot matrix-compatible printers and is aimed at users who want to avoid Risc OS fonts and printer drivers altogether.

*Flyprint* is priced £39.97 including VAT. Dixon and Dixon can be contacted on 091-285 3042.

ICS WIZZO (it's magic)

051-625 1006

### The ideA range

ICS was the first company to offer IDE products for Acorns back in 1990; now they are the standard choice for new Acorn computers. Building on three years' experience we have continually improved our IDE filing system. It now offers the highest level of RISC OS compliance, and compatibility with at least 45 different hard discs tested by us. Can any other supplier make this claim?

Our IDEFS abolishes the RISC OS limit of 512 Mb, and offers extra features such as password protection, background operation, disc partitioning, and power saving (which allows some discs to stop spinning when idle).

Partitions can have different levels of protection. Family or pupils can access some of your files while you keep others safely out of their reach. Or you can simply protect the whole disc (reformatting is not required for this).

Our hard disc upgrade kits are based around two internal interfaces at present: IDEA3IN for the A3000 Series, and IDEARCIN for the A300/A400/A500 Series. All kits are designed to a high standard and include all the parts you will need.

IDEA3IN upgrade kits include an I²C expansion socket as standard. They come with a 2½" disc already attached, and are easy to fit once you have opened up your computer. False rumours have been spread in the past (by sellers of SCSI hard discs) that internal upgrades might not be safe in an A3000. In three years we have never heard of an actual problem, but please ask Acorn's Technical Department if you wish to be reassured.

IDEARCIN upgrade kits provide a fast 16-bit link all the way from the computer to the hard disc. They can even be fitted to an A310 without a backplane – quite a cost saving. A second hard disc can easily be added later if required.

Interfaces and hard discs can also be bought separately. By shopping around you may even save a few pounds. But beware: not all IDE hard discs work with all interfaces, and if you have a problem it may be difficult to decide who should put it right. We recommend buying a complete kit from one source.

WIZZO is the name given to our IDE filing system when it is supplied as a single rom chip. Wizzo5 is for the A5000, and Wizzo4 is for the A4. You should buy a Wizzo if you need password protection or wish to use larger hard discs. (Wizzo4 has been delayed slightly – we are adding a feature to ensure compatibility with possible future A4 upgrades).

A Wizzo rom by itself will only produce a slight speed improvement. If you need speed in an A5000, fit an IDEARCIN interface instead. Up to 60% improvement can then be achieved, but this does depend which hard disc you use so do check with us first.

### How to read our ideA product references

A number at the end is the nominal hard disc capacity in megabytes. We usually round this down, so the actual formatted capacity may be higher. All discs have auto-parking. Average access times vary but all are below 20 ms.

All prices shown exclude VAT and are subject to change without notice. The cost to us for hard discs can vary enormously from week to week – not always downwards! Your local dealer can obtain *ideA* products from us or from a distributor.

### Archimedes A300/A400/A500 Series Internal Upgrades

*Package includes formatted hard disc, ideA interface card, hard disc cradle and fittings, fan kit, replacement multi-purpose LED (power and drive status), manual with fitting instructions. Can be fitted to an A310 without a backplane. If a backplane* is *used it must be a 4-layer type. Easily fitted by most users.*

| | | | |
|---|---|---|---|
| IDEARCIN 80 | £225 | IDEARCIN 240 | £425 |
| IDEARCIN 100 | £255 | IDEARCIN 330 | £500 |
| IDEARCIN 120 | £275 | IDEARCIN 426 | £575 |
| IDEARCIN 170 | £305 | IDEARCIN 540 | £799 |

### A3000 Series Fully Internal Upgrades

*Package includes formatted hard disc mounted on ideA interface card, manual with fitting instructions. Fully internal, using internal expansion slot. Co-exists with floppy drive and memory upgrades. Fits the new 1992 computers. Easily fitted subject to Acorn warranty stipulations.*

| | | | |
|---|---|---|---|
| IDEA3IN 40 | £225 | IDEA3IN 120 | £350 |
| IDEA3IN 60 | £275 | IDEA3IN 130 | £450 |
| IDEA3IN 80 | £325 | IDEA3IN 209 | £499 |
| A3000 FAN KIT (not usually required*) | | | £19 |

**Only required if the computer has been fully upgraded, e.g. with maximum memory AND Econet AND an external podule.*

### Separates for hard disc upgrades

*We can only guarantee the performance of ideA interface cards with hard discs we have tested ourselves, so please check if in doubt. If you are buying a hard disc for an A5000 please say so. If you intend to fit the disc in addition to an existing one we need to know the make and model of the existing disc. Acorn's interface does not support all makes of disc, and some models will work as a second disc but not on their own.*

*Hard discs on their own are listed as, for example, IDEA 80. An S at the end indicates a 2½" disc.*

| | |
|---|---|
| IDEARCIN (Archimedes Interface for Internal disc(s)) | £60 |
| IDEA3IN (A3000 Interface for Internal disc) | £75 |
| ARCHIMEDES INTERNAL CRADLE KIT | £15 |
| ARCHIMEDES A300 / A400 SERIES FAN KIT | £15 |
| 4-SLOT 4-LAYER BACKPLANE | £52 |
| POWER CABLE FOR SECOND HARD DISC | £5 |
| A5000 SECOND HARD DISC FITTING KIT | £15 |

| | | | |
|---|---|---|---|
| IDEA80 | £179 | IDEA240 | £350 |
| IDEA100 | £215 | IDEA330 | £470 |
| IDEA120 | £245 | IDEA426 | £499 |
| IDEA170 | £275 | IDEA540 | £750 |
| IDEA40S | £140 | IDEA120S | £299 |
| IDEA60S | £200 | IDEA130S | £399 |
| IDEA80S | £245 | IDEA209S | £449 |

### WIZZO IDE Filing System on rom

*Package includes rom, manual and fitting instructions. Compatible with RISC OS 3.0 and 3.1. Allows up to four logical partitions over two physical drives. Each partition appears separately on the icon bar and can have different password protection. Makes use of existing Acorn hardware for maximum compatibility, but works with a wider range of hard discs. Security breaches using ADFS can be prevented. Can be fitted easily by a competent user.*

*Available now:* WIZZO5 for A5000 — *introductory price* £29
*Available soon:* WIZZO4 for A4 — *introductory price* £29

Quantity discounts available • Dealer enquiries welcome

ICS (Ian Copestake Limited), Dept B45, 1 Kington road, West Kirby, WIRRAL, Merseyside, L48 5ET

# HYBRID OF SCANNER DIGITISER

**COMPUTER** Concepts and Wild Vision have combined two of their products to produce the ScanLight Video 256.

The package is a hybrid of the Wild Vision GreyHawk mono video digitiser and CC's ScanLight 256 scanner interface. The card can digitise graphics sourced from either a compatible image scanner or from composite video input.

ScanLight Video is supplied with the same 400dpi 256-greyscale hand scanner as the original ScanLight and includes the latest version of Computer Concepts' *ScanLight Plus* image processing software.

ScanLight Video costs £220 + VAT compared with GreyHawk on its own at £99 + VAT and ScanLight 256 (handheld) which is priced at £189 + VAT. Upgrades are available to the combined product.

*CC is on (0442) 63933*



The ScanLight Video 256, combining video digitiser and scanner

# SEIKOSHA PRINTER

**A FAST** inkjet printer capable of 300 characters per second (cps) has been released by Seikosha UK. The SpeedJET 300 is HP DeskJet 500-compatible and has a 128-nozzle print head instead of the 50-nozzle head used by some rival manufacturers.

Seikosha claims the SpeedJET is twice as fast as either a HP DeskJet 500 or the new Epson Stylus 800 inkjet in character mode printing. A large ink reservoir is featured and buffers up to 256K are available to supplement standard 16K memory. It costs £359 + VAT.

The latest dot-matrix from Seikosha is the SL-150136 column 24-pin printer.The SL-150 has a RRP of £349 + VAT.

*Seikosha UK is on (0753) 685873*

# PANASONIC MONITORS

**PANASONIC** has announced 17in and 20in PanaSync Pro Series monitors with MPRII low radiation conformance, 0.28mm dot pitch, digital control of pincushion and moire distortions.

Anti-glare and anti-static screen coatings are used as well. The maximum resolutions supported reach 1280 x 1024 pixels. The PanaSync Pr 5 TX-D1713 costs £1399 + VAT and the PanaSync Pro 6A TX-D@032 will cost you £2199 + VAT.

*Panasonic is on (0344) 853915.*





Coming to a screen near you

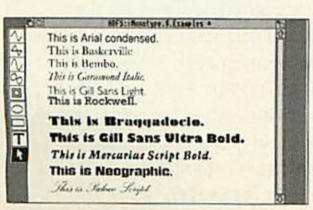
# FONTS FOR RISC OS

**LOOKSYSTEMS** in Norwich has obtained an exclusive licence to distribute the Monotype range of typefaces for Risc OS computers.

The first LOOKsystems pack of 100 fonts is available for £95. The company's founder, Adrian Look, commented that as a result of the falling prices of TrueType fonts in the Mac and PC markets, Risc OS users are benefiting; 'These changes have made it much more viable to convert fonts into Risc OS format. By releasing Monotype fonts, we will transform the range and quality of typefaces available for the Archimedes, and they will be better value for money'

The fonts include familiar names and are in either Risc OS 2 or 3 format with scaffolding and learning pairs in the latter.

*LOOKsystems is on (0603) 764114.*





Some of the fonts available

# PLAYING THE GAME

**GAMESWARE** is a new Acorn games software label set up by former Acorn marketing manager, Simon Lovesey.

The aim is to produce more successful conversions from non-Acorn computers and the company has already secured Acorn rights to *Xenon 2* and *Robocod* with more releases planned for the Autumn.

*Xenon 2* was written by the Bitmap Brothers and was a big hit in the Amiga format. *Robocod* has only just appeared on the Amiga format but also looks set to become highly popular. Gamesware is keen to receive any suggestions from users and say that they hope to speed up the conversion of big titles from the 16-bit market.

Lovesey said: 'For a long time, Acorn owners have been starved of many of the best games; GamesWare will ensure that many leading games are brought into the Acorn market.'

Look out for a review of *Xenon 2* in next month's games section of *Acorn User*.

*Gamesware is on (0703) 456523.*

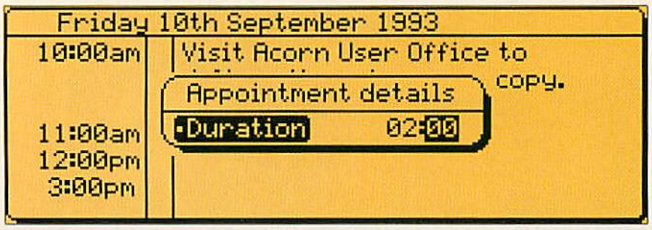




Simon Lovesey takes a hands on approach to the games market

# ACORN POCKET BOOK SAVINGS

**ACORN** has announced that until 30 September the Pocket Book personal organiser/computer is available for the special price of £199.69: £50 off the RRP. There's also a new organiser application, *Schedule*, for £19.95.



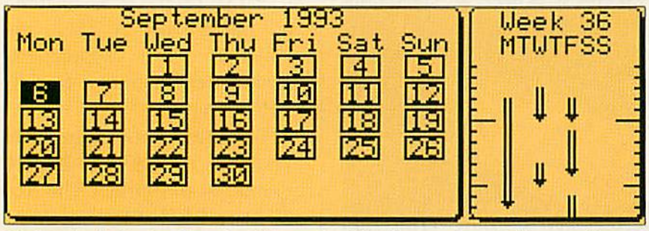

Everything the organised journalist needs to ensure his piece is in on time

*Schedule* is a much-needed version of the Psion Series 3 Agenda application. Sharing most of the features of *Agenda*, *Schedule* was written by Acorn and has a different look and feel, with more emphasis on the needs of teachers and students. *Schedule* reverts to its listed price of £49.95 on 1 October. See page 50 of this issue for a preview.

Acorn's Pocket Book product manager, Henry Howarth, commented: 'This special offer is designed to get the Pocket Book more established in the schools market as well as making it more attractive for parents to buy for their children.

'We are bringing out the Acorn *Schedule* application as a direct result of feedback from our customers who perceive a need for a personal organiser for their work, leisure and personal life.'

*For more information contact Acorn on (0223) 254254*




30 days hath September. And if you don't believe us here's the proof

# ACORN TWINS UP

**THE** Swiss-owned software company, Digital Arts AG, has been signed up by Acorn. The aim of the joint venture is to develop applications aimed squarely at the printing, publishing and graphic design markets.

This follows hard on the heels of the news that the prepress printing specialist AB Dick has officially adopted Archimedes computers to deal with its computer-based prepress solutions.

Acorn's business unit manager, Simon Woodward, commented that the Digital Arts involvement with the company would serve to complement another recently-secured deal by Acorn: in this case to support the Kodak Photo CD imaging technology.

'It is quite possible that aspects of the Digital Arts Technology will actually be integrated into the Acorn Risc OS multi-tasking operating system,' he said.

Digital Arts is perhaps best known for its professional publishing applications developed for the NextStep environment as well as the Atari ST platform.

# MATT BLACK SEES IMAGE OF THE FUTURE

**PHOTOLIB**, a CD-Rom photo library featuring over 4000 high quality digitised colour photo images, has been released by Matt Black, with future links to Kodak Photo CD in mind.

Used on their own, *PhotoLib* images are ideal for on-screen presentations. Once Acorn's Kodak-compatible Photo CD system is available, *PhotoLib* will become a catalogue for the full library of professional Kodak Photo CD images. Selections from the 4,000+ image library will be supplied on special theme Photo CDs priced £299.

The basic library disc is in a general CD format, but Matt Black includes Risc OS 'drag and drop' software for image accessing. A demo is available for £5. The 4000 image CD-Rom costs £299.

*Matt Black is on (0733) 315439*




Red hot and rocking. One of the 4000 images from PhotoLib

## In brief

### E-mail Acorn User

Acorn User is now on e-mail. The address for the office is editorial@acornusr.demon.co.uk – please note subscription enquiries should not be sent to this address, but to the address on the subscriber's page. All mail will be replied to, but don't expect faster replies than with snail mail.

### CC confusion

Many apologies to our readers and Computer Concepts for a misprint in our August issue. The price of the LPB4 direct drive laser printer is £999 + VAT and the price of the LBP8 £1495 + VAT. Both offer fast printing by contructing the image in the printer's own Ram. For more details call Computer Concepts (0442) 63933.

### Dealer open days

The following Acorn dealers are holding education and consumer open days in September. Visitors will be welcome: Sharbrook Systems (0823) 334383, 10-11 September, County Hotel, Taunton; Minerva Computers (0392) 410137, 17-18 September, Countess Weir Hotel, Exeter.

### Check this out

The 1992 World Chess Computer Championship was won by an Arm Risc-based computer, beating parallel processor specials, 60mips workstations, even a mainframe. The custom Arm PC card was produced by Dutch firm TASC and uses a 32MHz Arm60 chip and extra-fast static Ram.

### How to get Resultz

Colton Software was due to start shipping its Resultz spreadsheet package a few days before this issue hits the streets. The price has been set at £119 + VAT. Registered existing users of Pipedream will be mailed direct by Colton with upgrade details.

### Software theft

'Innocent' end-users are the worst offenders according to the Federation of Software Theft (FAST). 59 per cent of FAST's activities in the last year centred around end users ignorant of software copyright laws. FAST is on (0628) 660377.

# STEP UP TO EUREKA v.2 AND SAVE OVER £40

*EUREKA brought the power and innovative features of the very latest in easy-to-use spreadsheet technology to all RISC OS users. And now EUREKA version 2 has even more to offer you:*

*In fact, there are over 100 individual improvements upon version 1, including extended documentation and a fully comprehensive index.*

## What's new in Eureka version 2

- Scale printing of worksheets and print-to-fit a single page
- Worksheet zoom in and out
- Display (and print) formulas
- Worksheet find and replace
- Improved worksheet linking
- Automatic loading of any supporting documents
- Fully compacting memory manager - dynamically releases memory when you close a sheet
- Palette editor - allows any possible colour to be used in a worksheet or chart
- Eureka macrosheets
- Complete macro language for creating custom worksheet functions
- User definable page breaks and set print titles - for large worksheets
- Function key strip
- Chart series editor for direct editing of data series
- Automatic line of best fit for scatter charts
- Display / hide points on scatter charts
- Charting of multiple selections
- Save a selection as a worksheet, Lotus 123 file, CSV, SID or drawfile

*If you already use another RISC OS spreadsheet, here's an offer you just can't refuse !*

*Just tell us what it is, and where and when you bought it, and we'll supply you with a full copy of EUREKA version 2 at the unrepeatable special offer price of £82.10 (£99.99 including p&p and VAT). That's a saving of over £40 on the RRP.*

*But remember, this very special launch offer must end on the 17th of September, 1993, and definitely will not be repeated. Don't be disappointed, claim your own copy of EUREKA version 2 today !*

**ORDER FORM**

I am currently using

❑ Schema ❑ Pipedream ❑ Logistix

Other ________________(please specify)

I bought it from ____________________

Date purchased ______________________

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# ARC FLIES AHEAD OF PC ON CD



ILP found the Arc the best option for the display demands of multimedia

**AN ARCHIMEDES** version of Interactive Learning Productions' (ILP) CD-Rom multimedia title, *British Birds*, has won a prestigious gold award at the British Interactive Multimedia Association's annual awards. Although the same title is produced in the IBM PC-compatible MPC format, it was the Archimedes version which scooped first prize in its category.

The CD-Rom, which was developed in association with the British Library and the RSPB, features full motion video, text, sound, images and hyperlinks. 'The Archimedes is a magnificent machine which offers all the facilities we need on a multimedia platform,' commented ILP's director, Fred Grainger, who added that because of this all his company's CD-Rom titles were now being developed and mastered on Archimedes before they are ported to use on other platforms.

Acorn's technical director, Malcolm Bird, added: 'It is encouraging to find our platforms could provide the most cost-effective multimedia capabilities for schools and the *British Birds* CD for the Archimedes deserves the recognition.'

ILP won another BIMA gold award last year for a Ministry of Agriculture-commissioned interactive computer display using 30 Acorn computers at Alton Towers.

*ILP is on 091-261 1255*

# BETTER BY DESIGN

**SILICON** Vision has released an updated range of multi-tasking Risc OS electronic design automation (EDA) tools, including its *ArcPCB* family of applications.

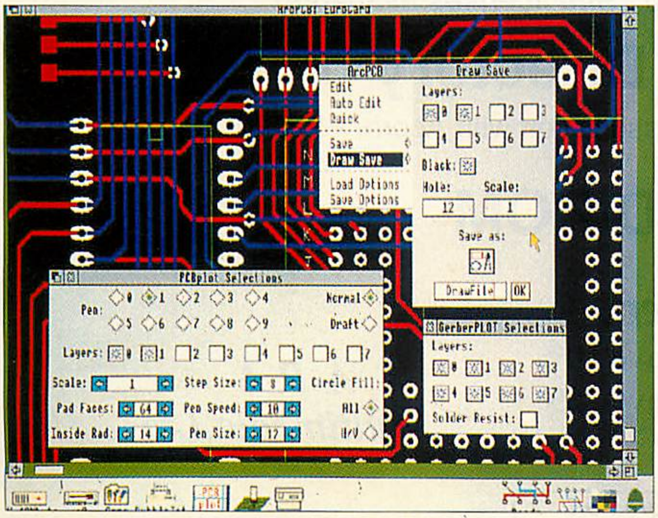
All *ArcPCB* versions can now save drawings in multiple layer combinations with scaling, and can use any Risc OS printer driver directly.

*PCBPlot* provides full plotter control allowing combined layers to be plotted. New *GerberPLOT* and *ExcellonDRILL* Risc OS-compliant versions have been added.

A new version of *PowerROUTER* has full rip-up re-try routing with individual track widths.

*ArcPCB* v1.8 will be priced at £125; *ArcPCB Professional* v3.2 £275; *ArcPCB Schematics* v5.1 £375; *GerberPLOT* v2.1 £75, *ExcellonDRILL* v2.1 £75, and *PowerROUTER* £195.

*Silicon Vision is on 081-422 3556*


Get down to some serious circuit training with ArcPCB

# CARNIVAL SUCCESS

The second annual Lindis Computer Carnival, which was held at Norwich on 12 June attracted over 1500 visitors and was declared to be an unqualified success by the organiser and Acorn dealer, Lindis International.


Carnival time in Norwich

A number of third-party Acorn product companies had exhibits and all said they were delighted with response and keen to return next year, according to Lindis' Jonathan Thomson.

Next year's event is expected to return to its original venue at the County InSET Centre.

*Lindis International is on (098685) 476*

# In brief

## Tesco is closed

The Tesco Computers for School scheme, which was extended until the end of June, has closed with expectations of record participation. Over 17,000 schools, a proportion of which don't yet use Acorn computers, are expected to claim Acorn software, peripherals and computers in exchange for vouchers collected since the beginning of March. Last year's scheme, which was on a smaller scale, prompted several key schools to adopt Acorn computers for the first time. Schools participating will start to receive their claimed items in September.

## Acorn plays games

Acorn is to have another stab at the home computer games market with an appearance at the Future Entertainment Show at Olympia in London between 11-14 November. 'We want people to realise there is more to Acorn than just education,' said Acorn's then consumer marketing manager, Simon Lovesey. 'The Future Entertainment Show will provide us with the perfect platform to demonstrate that we are also a major player in the leisure market,' he added.

## Stars in their eyes

Andromeda Interactive has confirmed its recent Interactive Space Encyclopedia CD-Rom for PC will be ported to the Arc. The CD-Rom is practically filled to its 600Mb limit with 2000 photos, 150 3D animations, and over 1000 text documents to help the user explore the the boundaries of the solar system – in the company of Patrick Moore.

*AI is on (0235) 529595*

## Electronics mags

A third-party index of electronics publications for Risc Developments' ArcScan III indexing application is now available. The Electronics Magazine Index costs £5 from M Kay, 69 Cobnar Road Sheffield, S8 8QD.

## Out of order

Apologies to readers confused by the Ian Copestake advertisement in the August issue.These pages were in incorrect order due to a printing error.

when you close down the Desktop

# FOREIGN GRAPHICS

**WITH** the ability to easily read foreign disc formats such as PC and Atari ST, the amount of graphics for the Archimedes has increased immeasurably. Programs such as ChangeFSI and Translator allow you to import non-standard graphic files and convert them to a form recognisable by Risc OS.

The latest version of each now includes the new(ish) JPEG (Joint Photographic Experts Group) format, which is extremely popular in the Multimedia world, due to its phenomenal compression rate.

This has led to an increase in pictures for the Arc, as much of this data is on CD-Rom.

'Picture This' (on page 53 of this issue) goes into detail on clip art available for the Arc on floppy disc. A further, so far virtually untapped resource, is that of CD-Roms primarily produced for the PC market.

The way that CDFS (the compact disc filling system for the Archimedes) is written means that it is relatively simple to read discs designed for the PC and load the information directly into an Archimedes.

The standard for bitmap graphics (made up of pixels) on the PC is superior to that of the standard Archimedes, especially when you have a machine fitted with some form of graphics expansion card. Such devices are capable of displaying pictures at extremely high resolution in 24-bit (16,000,000) colour.

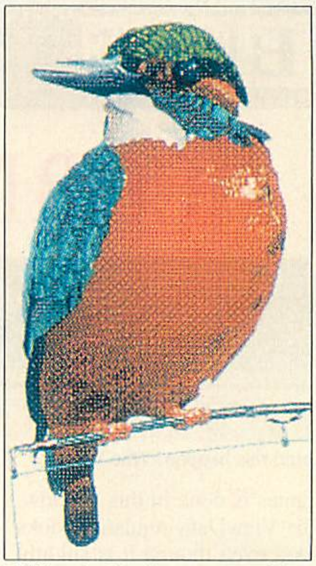
At present the Archimedes is unable to show such graphics in their true glory, although future machines from Acorn (see last month's news) should equal this standard or even surpass it.

The specification for the VIDC 20 chip, successor to the present VIDC 10, means that any new machine is likely to be at the forefront with regards to graphics.

The combination of a virtually unlimited graphics resource and the certainty that a new machine will eclipse other current machines, means the future for Acorn computers in the graphics market looks extremely good.

Kodak's commitment with its Photo-CD standard is another indication that you

# ARTWORKS WINNER



**THE** ArtWorks competition held by Computer Concepts has a winner. Walter Briggs of County Down won first prize for Kingfisher (above) and won a Canon BJC-800 colour printer. Ten runners up were selected; six more than planned as 'the general standard of the entries was far higher than we expected,' says Computer Concepts.

# THIS MONTH'S PICK OF THE PICS

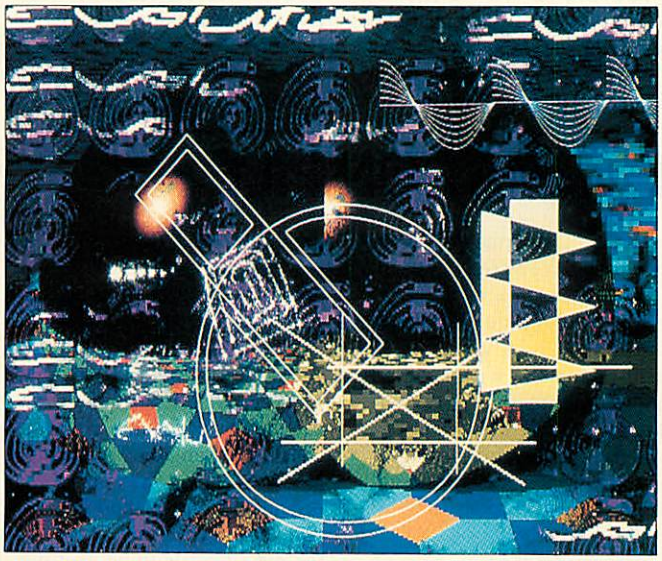
**THIS** month's winning reader picture is a rather surreal piece which goes under the simple name of 'Tec'.

Kane Clover, the artist responsible, used a combination of *Atelier*, *Euclid*, *Arclight*, *ArtWorks*, *Paint*, *ChangeFSI* and *Render Bender* to achieve the many effects present in the picture.

The end result is quite remarkable and illustrates well the use of a number of different packages used together.

The original picture was created on a standard-resolution Acorn Monitor in Mode 15, but we were able to 'grab' it from Artworks in Mode 28, producing a nice contrast between the pixel and vector graphics. £10 goes to Kane for his work.

If you have produced any pictures you think good



enough for the Graphics page, send them in.

Tell us how you created them (what packages you used) and what machine you used to knock your masterpiece together. And don't worry. It needn't be 32-bit: artwork produced on Beebs and Masters is welcome.

## In brief

### Scanlight video

Computer Concepts has announced the release of Scanlight 256 Video.

The single-width podule combines both Scanlight circuitry and the GreyHawk digitiser on the one card.

Low-level software is supplied in a Rom; the scanning and digitising application is on disc. Physically, you save a podule slot. The cost is also reduced. If you were to buy the two boards separately, it would cost you £340. The Scanlight 256 Video package costs £260.

You also get an A6, 400dpi, 256-greyscale hand scanner, plus discs. Take-One lets you preview incoming video at up to 50 frames per second.

The Scanlight application provides post-processing tools that can be applied to the output from the scanner and the video digitiser.

Both the original Scanlight 256 and Greyhawk packages will still be available. Upgrades are possible from either package to the new Scanlight 256 Video.

*Further information from Computer Concepts on (0442) 63933*

### Morpheus

The new morphing package Morpheus, which was mentioned in these pages last month, is now being distributed by Oregan Developments.

A full release version is expected to be hitting the streets around the middle of July, so it should be out by the time you read this.

*Further details from Oregan on 021-353 6044*

### Call Acorn User

You can contact the Graphics Page with any news, views or comments by writing to us here at The Graphics Page, Acorn User, 101 Bayham Street, London NW1 0AG, or you can contact us by Modem via Arcade BBS user #1144.

Arcade is on 081-654 2212 or 081-655 4412. If using Arcade, please keep it to just messages. Any large files such as pictures should be sent on disc to the Acorn User address above.

# BBS WITH HOST OF FEATURES

**CREATING** and running a BBS is a time-consuming affair, but the hard work put in by the Sysop often goes unnoticed when the result is a BBS that is easy to use.

Scrolling BBS systems present information to the user in a fairly simple way, and the way round the BBS is defined by a small number of menu options. Most scrolling BBS users spend little time actually reading the menus or marvelling at the ANSI graphics, but get on with file and message transfers.

When it comes to ViewData systems, there is a new angle – users actually read what's on the screen. The information is presented as complete pages, which may be linked in sequence, but most pages are also accessible from any other. A well-thought out ViewData BBS system may have thousands of pages, all of which have had to be creatively-designed graphically as well as textually, and have logically linked routing to each other.



Could this happen? Who knows...

*VHost* by Gareth Babb is a fully multi-tasking PD ViewData BBS system for Risc OS machines that offers comprehensive facilities to its users, and for the SysOp who has time to build all 3072 frames that are possible.

*VHost* opens a local terminal window when run. Almost all editing and setting up of frames is done in this window. The ViewData emulation looks good even though it is slightly wider than usual, and does not yet support all the effects available to online users.

The basis of the system is built around Closed User Groups. I found the draft instructions given with the program here a little obscure. Example frames for the basic functions of logging on and user registration are essential, and the lack of these in the supplied database makes getting started quite frustrating. The frame editor is comprehensive but not too friendly – for instance the character under the cursor is not shown.

There are numerous frame options, page location and commands by keyword, chat and multiuser chats and an interesting built-in resident user called Hector who looks after the system for you, compiling daily statistics and even talking to other users online. Messaging frames and downloading are all supported including Wizzo, a new version of ViewData allowing eight-bit file transfers, a rudimentary form of compression and special screen functions.

Gareth has crammed a lot into this system, and it can be seen running on CCl4 BBS in Hull on (0482) 798249 (v21-V32bis 8N1 ViewData). *VHost* is available for download from Bulletin Boards including The World of Cryton, (0749) 670030, and Arcade BBS.

# INTERNET INFORMATION FILE

**VIRTUALLY** everyone with access to a networked computer at university or college can get PD software from all kinds of archives of Acorn programs at various sites. Modem users with access to an Internet gateway can also retrieve Acorn material from these same fileservers. Sites you can 'ftp' to include HENSA at Lancaster University - micros.hensa.ac.uk (148.88.8.84). Log on as 'anonymous' with password 'hensa' and select the Risc OS directory with 'cd / micros/arch/riscos' and then type 'get index'. Another site to try is rusinfo.rus.uni-stuttgart.de (129.69.1.12) - try 'cd /soft/acorn/riscos'.

The Newcastle University Info-server is a very popular mail-server site with hundreds of Acorn programs available. To retrieve a file from here you send an E-mail message to 'info-server@newcastle.ac.uk' in this special format:

line-limit 1000
request: sources
topic: archimedes filename
request: end

You can get an up-to-date index of what's available by substituting 'index' (without the quotes) for 'filename'. The index is a plain text file, but programs will be returned to you in uucode format, which is a way of converting eight-bit code into only the printable seven-bit Ascii characters. To decode it back into eight-bit code, you can use *SparkPlug*, *Spark* or *SparkFS*. *SparkPlug* is available free in the PD.

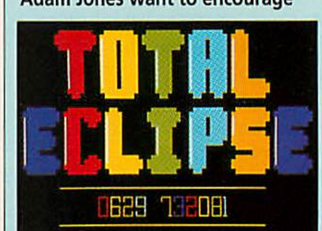
It may take a day or so for the message-file to be sent out to you. Most of these file-servers are operated by people in their spare time so do give this a thought when you are using them.

## In brief

● The ARMada is coming! Daniel Aston's new BBS located in Plymouth is now *online between* 9pm and 8am. Supporting speeds from 300-14,400bps, and a FidoNet Point connection, ARMada features a quarterly competition to win one of the big-name games as well as online games, news, messaging and file areas. The BBS runs on an A4000 using RiscBBS, and is FidoNet Point 2:254/25.3. To face the ARMada call 0752 407594 8N1.

● Many older Acorn machine owners will have graduated from now-obsolete machines such as the Dragon 64, Nascom I & II, Osborne, UK101 and many others. A new FidoNet Echo called Obsolete Computers has opened as a forum for discussion of old computers and ancillary equipment. It is also an ideal place to advertise for spare parts and other equipment for old computers. Topics and machines discussed in the Echo must be non-IBM PC compatible and no longer in production. Contact your local FidoNet BBS SysOp in nets 250, 253, 258 and 440 to find out about linking into the Echo.

● Another new BBS with a growing Archimedes file section is Total Eclipse BBS in Matlock, Derbyshire. SysOps Chris Foster and Adam Jones want to encourage




more Acorn users to join the Amiga and PC users already served. The BBS already has over 200 Archimedes files available for download. Call Total Eclipse on 0629 732081 300-2400 8N1 (16k8 soon) 24 hours.

● You can contact me by writing to: David Dade, BBC Acorn User, 101 Bayham Street, London NW1 0AG or by e-mail to: DaviD@arcade.demon.co.uk or by modem on Arcade BBS, User #2 – 081-654 2212 or 081-655 4412.

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| PETERS | £5.00 | £8.00 | 80% |
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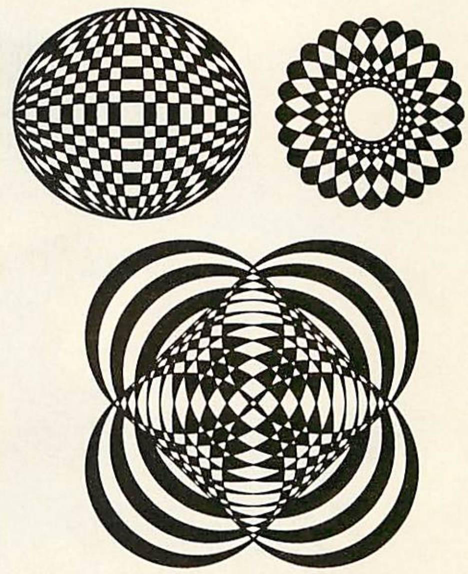
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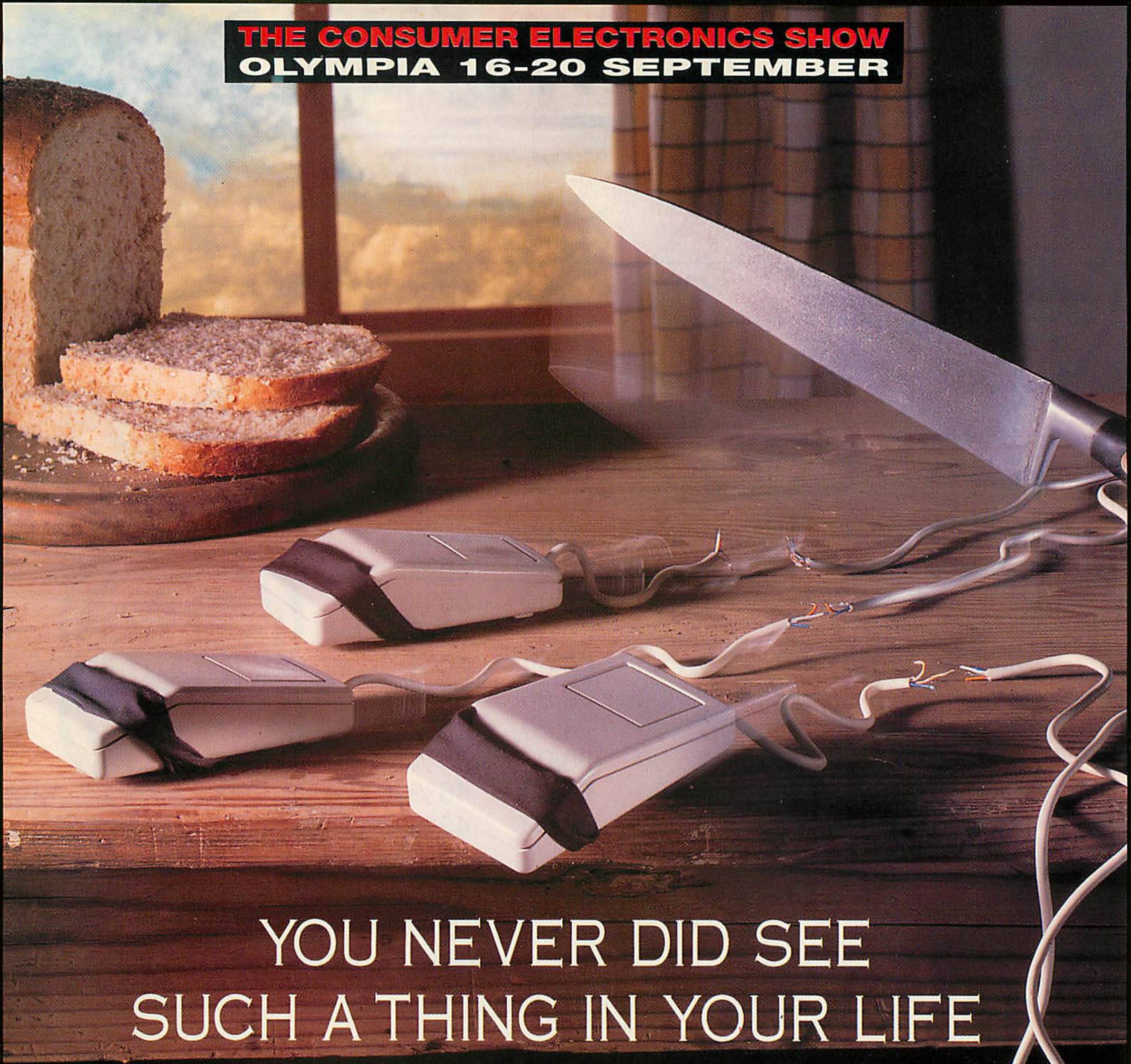
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# IMAGES FOR YOUR EYES ONLY

**'FOR YOUR** Eyes Only' is the latest version of a series of graphics convertors produced by Arm's Tech.

Working in C, Frank Lyonnet has produced a faster, more user friendly alternative to *Translator* or *ChangeFSI*. *FYEO* changes GIF and JPEG files (two standard graphic formats for the PC or Mac) into desktop sprites.

Once installed on the iconbar, the program is ready to receive graphics files for conversion. Processing is done in the background, but does slow down the desktop considerably on Arm2 machines. The converted picture then appears row by row.

Unlike *Translator*, the preferred mode for the picture is not automatically entered, but the multi-tasking capability of the program lets you get this right while the picture is actually being converted.



Shaken, not stirred, by Frank Lyonnet's *FYEO*

Overall quality is not quite as good as *Translator* and is actually similar to a *Translator* conversion without Floyd-Steinberg integration. Hopefully later versions will have better dithering. Although *FYEO* doesn't include all the options of its competitors, it's ideal for looking through a large number of JPEG files, given its comparative conversion speed which beats *Translator* and *ChangeFSI* easily.

# YUL BRYNNER'S MEMORIAL TOOLSHED

**THE** title of the fourth issue of this successful Archimedes and Amiga disc magazine should give new users an idea of what it's about, but here's a quick explanation just in case.

After an animated musical intro, the magazine itself is entered. Graphics are mixed liberally with the text, and topics range from the serious to the seriously funny. Computer-specific material is avoided as this would hinder the cross-format success.

All the original stories are still there. Ed Maxroom is up to the usual standard (if a little mad) and other highlights include a thesis on engineering with thermonuclear devices.

Editor Andy Bennet has asked me to appeal for contributions about anything other than computers as well as an artist to assist with the design.



Pulling out all the stops with Yul Brynner

# KYSMET

**ANYONE** with several floppy and hard discs will have experienced the problems of the relatively short desktop iconbar. When it fills up half way on boot up, it doesn't take long before you're running out of room. Risc OS offers a solution to this by scrolling left and right, but a new PD utility from SICK called *Kysmet* presents a novel alternative.

Placing all icons for the filing system devices above the iconbar certainly makes mouse access quicker, as well as throwing in a few added bonuses. Time, date and free memory can all be shown, and a handy dismount button is also available for those people with 20Mb drives.

Kysmet can be used to control all the main drives and filing systems, as well as compressed 'devices' like CFS or SparkFS. All these features are fairly easy to configure, but it may take a few minutes to enter all the details of your specific filing devices. Full instructions detailing how to do this are included.

## In brief

### ZAP: APDL B138

Version 0.9 of the editor *Zap* (see last issue) is now available. Several bugs have been removed and many features added since the previous release. One of the main improvements is a simple C editor, which will be improved further in future releases.

### BPP DISC MAG

German coders Bytepool have joined the current trend for disc magazines with *Hardliner*. The magazine is written completely in German, but as far as I can tell




the first issue is freeware, and further issues cost 5DM. Further information can be obtained from: Zach, BytePool Produxions, Reihwiesenweg 16, 31191 Algermissen, Germany.

### THE SCENE

- After making these pages with Nirvana last month, Bytepool is back with its second major demo, *Premium Verum*. Coded in the week leading up to CeBIT 93, and released during the show, it's a multi-part megademo combining full overscan modes with fast sprites and vectors. Bytepool's presence at the show formed the centre of attention and everyone there on the Arc scene contributed, so it's worth a look.
- Another German group, XYMOX Project, is still working on its first demo which should be released late this summer.
- Dave Williams of PPP has produced another excellent Basic demo. Dave gets some effects into the demo and puts many Arm-coded demos to shame. All sections are accompanied by great music. I'm waiting for the first Arm-code PPP demo which should get close to the standard of the best Arc demo crews.
- If you have any ideas or comments on the PD page, contact me, Paul Wheatley (alias COBRA) at the Acorn User office.

# "SUMMER SPECIAL"
## on Cub Colour Monitors




If you've got one of the popular BBC 'B', Master, Commodore 64* or Atari ST* computers, and you're still using a monochrome display, TV or inferior quality colour monitor, then there's never been a better time to look at upgrading.

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# KIDS IN THE DOCK

Take seven kids, some leading software, put the two together and what do you get? We find out in the first-ever Acorn User kids lab

With the advent of the family machine – the A3010 – many parents and children are after good software to use in the home, but it isn't always an easy task. Many of the educational programs are targeted at schools and the negative effects of arcade games are all-too-well publicised.

So what do the children themselves think? Are they only willing to look at games that offer mass destruction or mindless repetition? Can educational software compete against platform games? To find out, we selected a list of well-known programs and asked three families to try them out. Some platform games were included: we chose *Gods, Twinworld* and *Lemmings*. Then we picked out some educational software that might find a place in the home: *Crystal Rainforest* is an environmental adventure game, with some complex puzzles to solve. *Kid Pix* is a painting package which was highly successful on other platforms. It includes some novelty features: a Lemming-like voice protests 'oh no' when the Undo option is used.

Finally, *Smart* is an art package with a difference. The user creates pictures from an array of graphical parts found in the original package and the resource packs.

# ON THE PANEL

**Seven testers tried programs aimed at their own age group. We asked them what they thought: was it a riveting trial or just one big yawn? Then it was over to their parents for the adult perspective.**

## MATILDA LAWRENCE
### Age 8



Matilda admits to being 'half a tomboy. I like doing some girlish things and some boyish things'. She's already a seasoned computer user, with four years of *Bughunter, Cyber Chess* and *Tetris* under her belt.

Matilda uses Acorn computers both at home and at school.

## ZOE LAWRENCE
### Age 6



Like sister Matilda, Zoe has also used a computer for four years. A confirmed socialite, Zoe cites her favourite pastimes as 'bouncy castles and parties'. The *Fun School* series is on her list of favourite programs and, since she is a violin player, *Notate* is also high up on the scale.

## CHRIS LAWRENCE
### Age 4



Christopher is the youngest of the Lawrence clan and he has been engrossed by *Viewpoints, Lemmings* and *Fun School* during his three year stint on the computer. Christopher told us that the secret of happiness is something to do with, 'toys, friends and nursery school'.

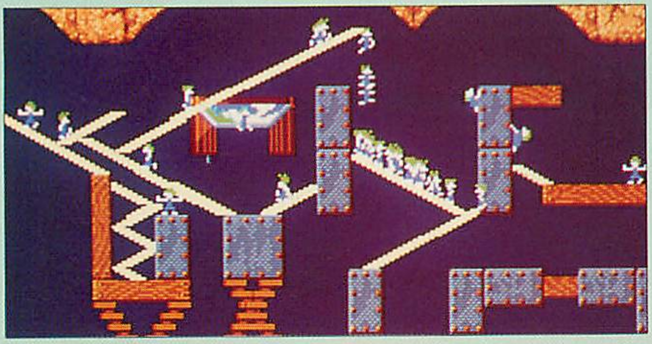
# LEMMINGS

**A well-known title, where Lemmings are saved from their suicidal tendencies**



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Everyone's heard of *Lemmings* it seems. Virtually all of our testers had played it at least once before, but that didn't dampen their enthusiasm. It received a unanimous vote of approval as cute and funny, with good graphics. 'I was glued to the screen and liked solving the problems,' Kathryn told us.



Although it got high marks from our panel, as a platform game, *Lemmings* is unlikely to win any education awards. Parents did however feel that it had some benefits. Quick thinking and a good memory are an integral part of the game and this can be useful to younger children.

'I think it's quite a good idea because it teaches you to get quick at doing things,' said Zoe.

For older children though it's just a bit of fun or, as one parent put it:

'Once the underlying principles have been grasped, the game is not demanding enough to challenge an intelligent, eight-year-old.'

**'I was glued to the screen and liked solving the problems'** Kathryn

### Scores

| | |
|---|---|
| Initial appeal | ★★★★☆ |
| Overall appeal | ★★★★☆ |
| Educational value | ★★★☆☆ |
| Anti-yawn factor | ★★★☆☆ |
| Long life | ★★★★☆ |

# CRYSTAL RAINFOREST

**The onus is on saving the environment in this educational adventure game**

**Supplier: Sherston Software**
**Price: £46.94 inc VAT**
**Tel: (0666) 840433**

*Crystal Rainforest* was voted a very likeable program, by parents and children alike. Matilda found it, 'more interesting than *Lemmings*, particularly at first,' and said that, 'some of it is quite hard, especially drawing the crystals'.

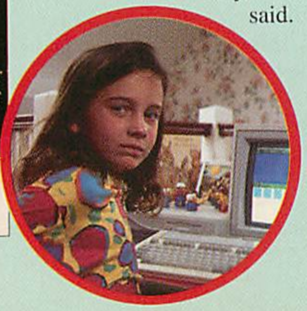



But not everyone found it instantly appealing. Freya said: 'I thought it looked boring and childish at first, but when I started to play it, it was quite fun. It was ace at times but then total rubbish at others.'

When it comes to parental approval, Crystal Rainforest gained the highest score. 'Imaginatively written and a good introduction to logo and reasoning,' was a typical reaction, although one parent pointed out: 'Not many children would apply themselves to this without adult prompting.' The graphics were also much admired. 'Beautiful presentation,' said one family.

Everyone found this program useful while it lasted but no-one thought it would appeal for very long. 'I'll finish the game in no time,' Freya said.

**'More interesting than Lemmings, especially at first'** Matilda



### Scores

| | |
|---|---|
| Initial appeal | ★★★☆☆ |
| Overall Appeal | ★★★☆☆ |
| Educational value | ★★★★☆ |
| Anti-yawn factor | ★★★☆☆ |
| Long life | ★★☆☆☆ |

## KATHRYN MARRIOTT
### Age 8



Kathryn used a computer for three years at school before she finally got one at home, a few months ago. She quickly acquainted herself with *Lemmings* and several other programs they don't have in lesson time. Away from the screen, her idea of heaven is a spin on the bike.

## CHRIS MARRIOTT
### Age 6



Christopher first used a computer two years ago and now rates it as one of his favourite pastimes. His computer credentials include *Zool, Pacman, Lemmings* and *Fireball* which he plays on the Acorn A3010 at home.

When out and about, he's avid about 'football and horse-riding'.

## FREYA WORRALL
### Age 13



When questioned, Freya insisted that she only plays 'the odd game', then proceeded to reel off a huge list of favourites, including *Chuck Rock, Repton, James Pond* and many more. You can't fool us Freya.

Freya told us she's well into grunge and always wears 'Docs'.

## HANNAH WORRALL
### Age 10



Hannah first started to use computers at the age of five and is now a devotee of *Repton, Chuck Rock* and *Pandora's Box*.

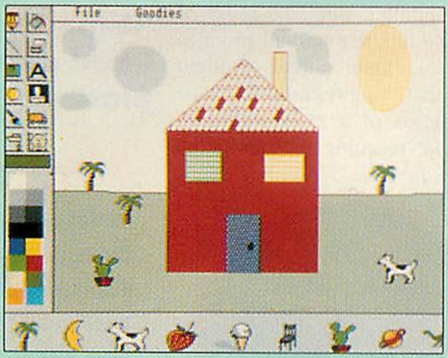
She also gets a kick out of art, singing, and, like her sister Freya, Hannah enjoys a spot of shopping and spending money.

# KID PIX

**A childrens' painting package with a novel approach and some game-like extras**

**Supplier: ESM**
**Price: £47.59 inc VAT**
**Tel: (0223) 65445**

'The more I play it, the better it gets,' Christopher Marriott said, and this seemed to sum up the general reaction. It appealed to almost everyone who tried it and one parent liked *Kid Pix* even more than the kids. 'I love it,' he said. 'It's like a fun game you can draw with.'




Freya told us she was glued to the screen: 'I'll come back to this program again and again.'

Few programs manage to appeal to all age groups but this was one of them. Even four-year-old Chris Lawrence found the program good fun.

It wasn't all perfect though. One tester lost a complete set of paintings by accident. And the reaction of parents was mixed. One thought that Kid Pix, 'offered no advantage over conventional art materials'. Another parent disagreed. 'With experimental and clever functions, *Kid Pix* is fun but also allows serious drawing.' Overall, *Kid Pix* was a good all-rounder with long-lasting appeal. 'I would only go back to it once in a while, but it would last me a couple of years, ' Hannah said.



**'The more I play with it, the better it gets'** Chris

### Scores

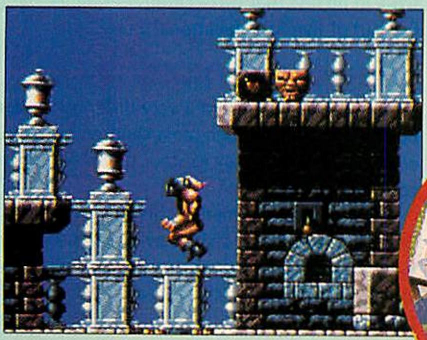
| | |
|---|---|
| Initial appeal | ★★★☆☆ |
| Overall Appeal | ★★★★☆ |
| Educational value | ★★★☆☆ |
| Anti-yawn factor | ★★★☆☆ |
| Long life | ★★★☆☆ |

# GODS

**A platform game where the player is an aspiring young hero, intent on becoming a deity**

**Supplier: Krysalis**
**Price: £24.99 inc VAT**
**Tel no: (0709) 372290**

Of all the programs, this one was the most controversial. Hannah and Freda are utter fans and gave it high marks. 'I'm sorry', said Freda, 'but when it comes to playability, it *has* to get a five. I couldn't stop playing it.' Hannah was equally rapturous. 'It's great. Lots of monsters, different levels, great graphics and loads of things to do in it.'



Yet other testers found it very unappealing. Matilda took one look at it and said, 'It looks gruesome and disgusting.' Kathryn agreed. 'I thought it would be really exciting,' she said, 'but spikes go up and down and kill you and it's very unpleasant.'

The parents were equally divided. 'There is a degree of problem solving,' said the pro-camp, 'because each level is a huge complex maze with hidden traps. The learning curve is the hallmark of a good game.' Yet the anti-camp were unimpressed. 'As a family, we are opposed to material with violent images,' one parent said. As for longevity, well that depends. Six years for Freya or just one game for Kathryn.

**'I'm sorry, but when it comes to playability, it has to get a five'** Freya



### Scores

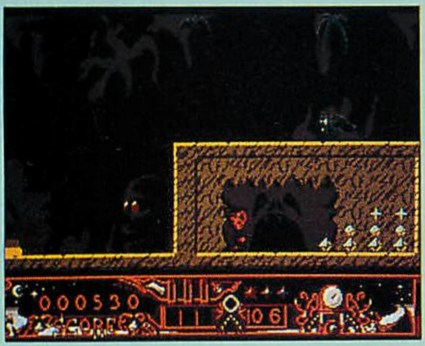
| | |
|---|---|
| Initial appeal | ★★★★☆ |
| Overall Appeal | ★★★☆☆ |
| Educational value | ★★★☆☆ |
| Anti-yawn factor | ★★★☆☆ |
| Long life | ★★★☆☆ |



## TWIN WORLD

**Set in a land of mythical beasts, this involves a quest to find the missing amulet**

**Supplier: Cygnus Software**
**Price: £19.95 inc VAT**
**Tel: (0533) 559711**



Once again the parents were divided on this platform game. 'Endless entertainment value, but nothing else to commend it,' said one parent.

Another was less critical. 'Like many of its type it has a logical structure with an achievement factor in understanding.' But he did admit that: 'At the end of the day it's just a game.'

The kids however were united. 'Instant addiction,' said Matilda. 'More than brilliant,' commented Christopher Marriott.

'I have recommended it to all my friends and they love it too,' said Freya.

And it scored well for longevity. Hannah said, 'It took eight weeks to get to the end and kill the dragon and I would still go back and play it every couple of weeks.'

**'It took eight weeks to get to the end and kill the dragon'** Hannah

### Scores

| | |
|---|---|
| Initial appeal | ★★★★☆ |
| Overall Appeal | ★★★★★ |
| Educational value | ★★☆☆☆ |
| Anti-yawn factor | ★★★★★ |
| Long life | ★★★★☆ |

## SMART

**An art program where the user can choose elements of a picture from a menu or resource pack**

**Supplier: 4Mation**
**Price: £64.63 inc VAT**
**Tel: (0271) 25353**




The tester who enjoyed this program the most was Zoe who was instantly involved. According to Zoe's parents, this was because 'she has recently learned to read, and the package gave her the chance to try out new words from the menu.' Aged eight, Hannah also benefited from the reading aspects and thought that it would stay interesting for 'about a month'. But like most of testers she wanted more to do. One parent thought that, '*Smart* could form the basis of a more valuable, far-reaching program.'

**'It made me laugh and I liked choosing the next picture'** Zoe



### Scores

| | |
|---|---|
| Initial appeal | ★★★☆☆ |
| Overall Appeal | ★★★☆☆ |
| Educational value | ★★★☆☆ |
| Anti-yawn factor | ★★☆☆☆ |
| Long life | ★★☆☆☆ |

## The reactions

Yes, our testers can vouch for the fact that platform games are endlessly exciting and addictive. Yet, it seems that the educational offerings can compete to a point against platform games, in terms of entertainment and interest.

Looking at the platform games first, it did not surprise us to find that some parents were not entirely happy about their influence.

'This is typical of the dismal, addictive programs with vaguely violent and fantastic overtones', said Mr Lawrence of one game.

'Children would play this type of game almost permanently, in the same way as they would eat nothing but junk food, if offered it.' His children however, were undeterred by this disapproval and gave the game a high score.

At the other end of the scale, some parents find themselves drawn into the game and turn into game players themselves. In one instance, the same 'dismally addictive' program mentioned above, became something of a family challenge.

'We found this game very amusing,' was the Worralls' response. 'It is a good game to group play and we all found ourselves making up silly names for the baddies.' As far as educational content goes, most parents agreed that platform games were more valuable to younger children where they helped to foster logical skills and quick co-ordination. Although some of the parents questioned were critical of arcade-style games, all of our testers were unrepentant fans.

One area where parental influence *can* make a difference is in the 'educational arena'. We found that child and parent were nearly always in accordance here. This could be partly be due to parental involvement: if a parent is interested in the program they are more likely to offer guidance and encouragement.

One example of this was *Crystal Rainforest*. Matilda gave it the top score in no less that three categories: while her parents also awarded it five out of five for educational value.

### THE YOUNG ONES

Younger children present a very different challenge to the software-buying parent. Although most children can play platform games at a early age, it is also easy to steer them towards programs with an educational slant.

Many programs aimed at this age group claim to improve reading skills, for instance, or spacial awareness. In a later issue of *Acorn User* we will look at some of the special considerations of this age group, looking at software such as *Freddy Teddy*, the *Funschool* series and the *Talking Books*.



New type for old!
idefs::IDEDisc.$ RISCdevs.CD
WHAT'S NEW, PUSSYCAT?
for the recently launched A4, and it has a sleek sloping design which is much more comfortable than the previous Acorn mouse. The mouse is also coloured warm grey to match the case.
On the back of the computer are a TV modulator socket, two joystick ports, a monitor socket (15 pin, as on the A5000), a headphone output, serial and parallel ports and the power switch. The mouse connector is also on he back of the case, which is far more convenient than the socket under the A3000, and there's a removable flap at the back where one mini expansion card will fit (the same cards that fit the A3000 will fit the A3010).
WHAT'S NEW, PUSSYCAT?
Physically, therefore, the A3010 represents an improvement on the A3000 in a number of ways. However, I found that the newly designed disc drive button, which is now almost flush with the case, was rather hard to locate without looking. Another personal niggle was that the reset button, which is now on the left-hand side of the case to prevent confusion with the disc drive button, is inset into the
stick port, as they need specific code to read the joysticks. Quest for Gold, which is provided with the Family Solution (see below) makes use of the joysticks, as do most recent games. One small niggle is that the joystick ports are not numbered on the computer's case, but that's not a major problem.
There are a couple of other interesting points about the hardware side of the A3010. There is only one

# ACCESS – YOUR FLEXIBLE FRIEND

**ACCESS IT**, Acorn's annual conference for teachers and other users serving the education sector, took place at Nottingham University in July.

260 delegates spent two very intensive days exploring a variety of aspects of educational computing. Training sessions covered topics such as *Genesis* authoring, *ProArtisan2*, 'IT- a view of the next ten years' and 'IT supports better spelling'.

The objective of this conference (the third of its kind) has always been software and hardware training – delegates are expected to have gained some expertise on a variety of packages or hardware by the time they depart on Saturday afternoon.

The choice was extremely varied and each timetable slot offered a choice of twenty or so different sessions. Most of the training is conducted by the software and hardware manufacturers and by staff from some of the Acorn in Education Centres.

The presence of the software houses also allows delegates to browse round their stands in the exhibition hall. Oak Solutions was showing the latest version of its Design Processor Software, which integrates over 6Mb of data with site licences for all the appropriate CAD tools needed for creating and editing designs. This package is being offered at £900, payable over three years but it is also possible to buy the system pre-installed on an A5000 from 3SL for only £1999.



Extensive timetable choices allowed students to tailor their conference

This offer amounts to less than the combined cost of the software site licences alone. It also includes three years of free updates to the information. SJ Research presented a variety of networking sessions including one on connectivity with PCs and Acorns transferring Rich text format files along the same network. It also demonstrated *Nexus Junior*, a system that allows up to six machines to share the same hard disc – with a variety of cable lengths and easy installation.

Some of us also spent some time with Anglia Television looking at the new data packs available for Key Plus and investigating the new features due to be available in version 3 of this data handling software package.

# BACK TO NATURE

**HAMPSHIRE** Microtechnology Centre has announced the forthcoming release of *Usborne Exploring Nature* for CD-Rom.

It contains text written by teachers and the Risc OS interface will allow easy movement around detailed information. Access to the resources is simple using a menu picture of a child's study bedroom from where a user can pass through doors and windows into common habitats.

Users can browse through a bookcase with pages of text and sprites. Should be around September, at £120.

*Details on (0705) 378266*

# ESM LINKS TO SCHOOLS

**ESM's** graphic datahandling package *SEELinks* will be available in September. The current topics are Transport, Pondwatch and Ourselves for primary sector and Tourism for KeyStage 3. Data is searched easily and the graphic interface is very friendly. Information gathered by pupils can be added to the databases. Packs cost £57.50 for a full site licence.

*ESM is on (0904) 63441*

# CAMBRIDGESHIRE SOFTWARE RACES AHEAD

**CAMBRIDGESHIRE** Software House has announced the completion of a brand new version of its *Cars: Maths in Motion* software running under Risc OS 3.

It allows users to set up a simulation of a Grand Prix on any one of 20 circuits; users can then set up their own teams and races.

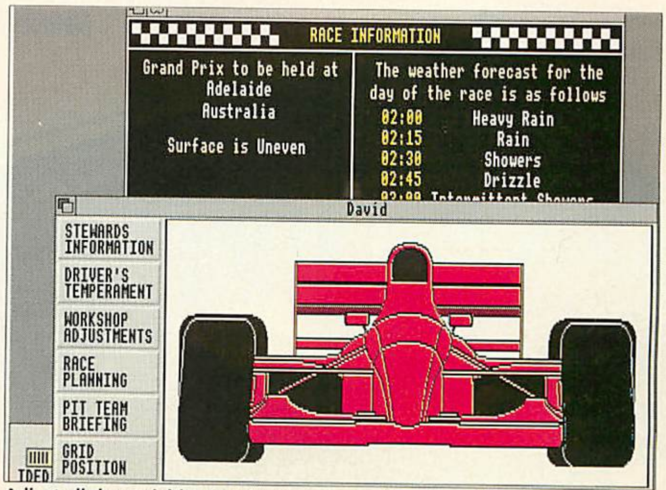
Those of you looking for good simulations to satisfy some of the higher level Key Stage 4 requirements for IT should definitely investigate this further.

Users are required to do a variety of mathematical tasks away from the computer prior to the race being run. Variables can be altered: pit stops, fuel carried, speeds around bends and weather conditions.

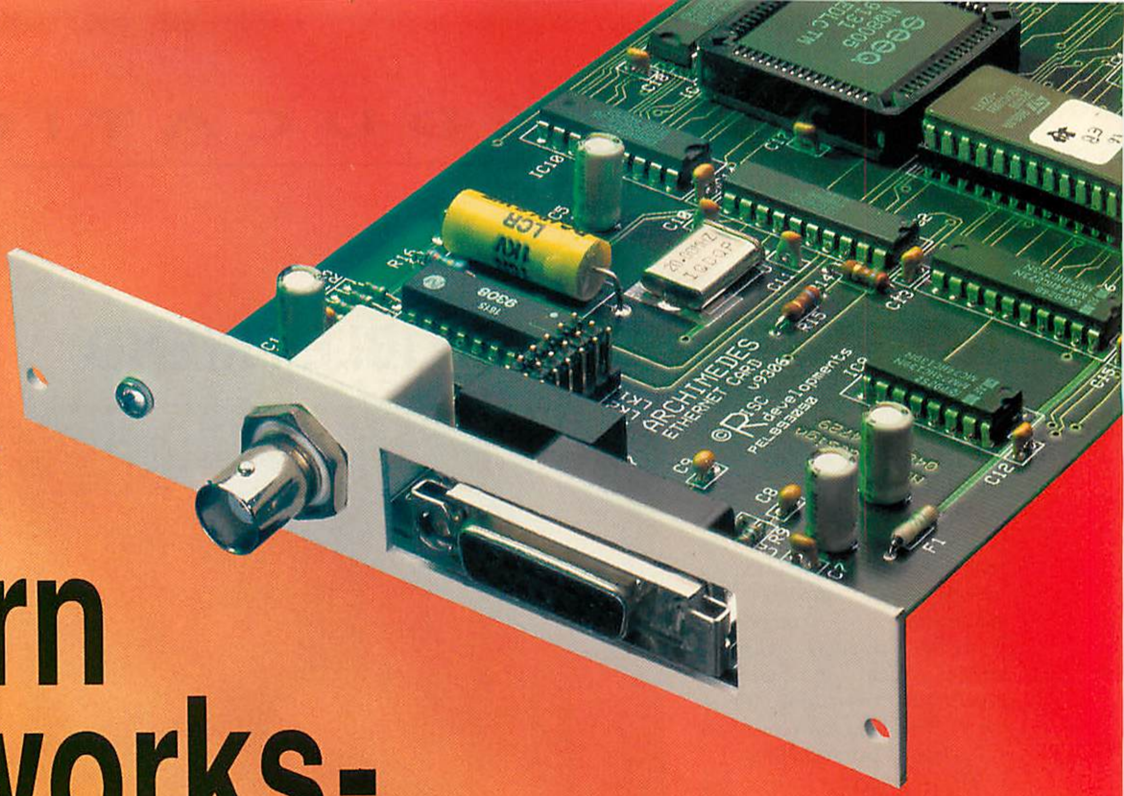
The pack comes with an impressive collection of worksheets and *!Draw* files and an easy-to-understand manual; but the program was sufficiently easy that I didn't need to refer to it initially.

It costs just £49.95 with site licences available and an upgrade price of £30 for people who have purchased the original version. The package is due in September.

*CSH is on (0480) 467945*




Adjust all the variables to set up a car even Nigel would be happy with



# Fast Acorn Networks-

## - WITH ETHERNET

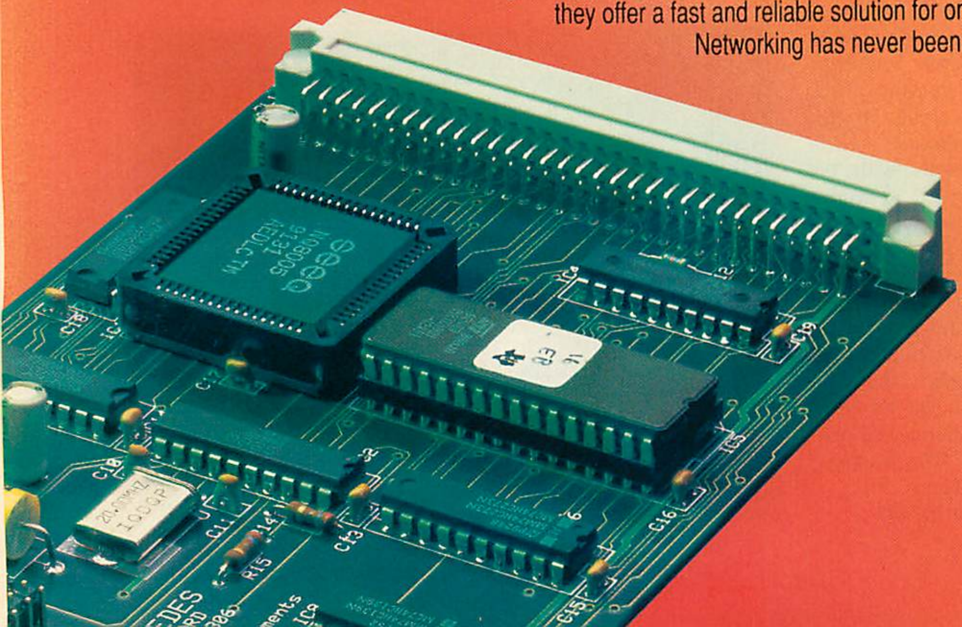
Managing a class of children all trying to run the same program on floppy drive computers can be a nightmare. Discs get lost or damaged and files can be corrupted, all of which will waste a lot of time at the beginning of a lesson. With hard drive machines things are a little better, but the duplication of resources means wasted money. And there is still the problem of students having different versions of the software or 'accidentally' overwriting it. Not to mention viruses!

Now there is a reliable alternative - Ethernet. Ethernet networking has been used by businesses and universities for some time, and is now available for Acorn computers. The benefits of a fast network are considerable, and you will have total control over the software used by the students. All users will also be able to share resources like CD players and printers, significantly reducing costs.

RISC Developments have designed and produced a full range of fast Ethernet cards for all Acorn RISC computers, to be used in conjunction with Acorn's new AUN Level IV network software. Our cards are being used in a growing number of educational establishments because they offer a fast and reliable solution for only £139. Networking has never been so easy.

We also offer a complete range of services for the network user. In the first instance we would be pleased to discuss the planning of your network, and ways to maximise speed and make best use of available resources. We can offer a full cabling service, configure your systems, install your software and train your network manager and staff. We will also still be available afterwards to help with any problems that you encounter later.

For anyone wishing to know more about networking, we have produced a pamphlet called 'Introduction to Networking Acorn Computers'. For a free copy, or if you require more detailed advice about networking, please do write or telephone.



RISC developments

**RISC Developments**
117 Hatfield Road, St. Albans,
Herts, AL1 4JS.
Tel: 0727 840303 Fax: 0727 860263

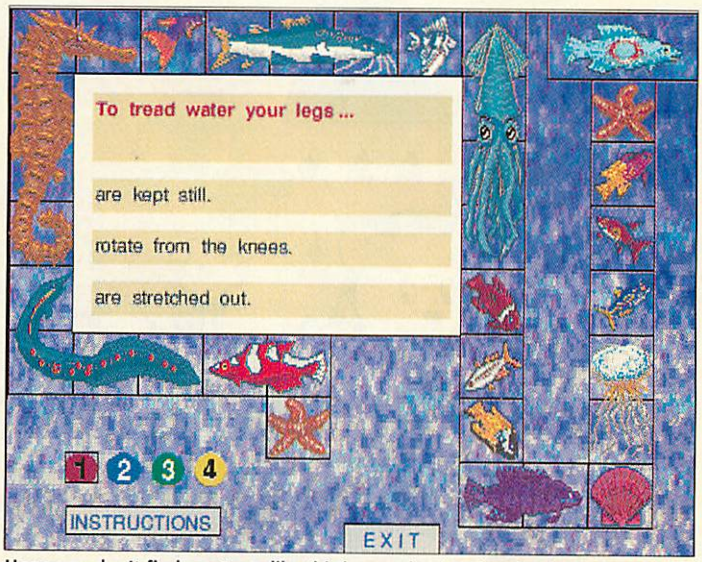
## SWIMMING

**Supplier: CD Sports**
**Tel: 051-691 0893**
**Price: £35.95 plus VAT**

Rather like driving, swimming is one of those life skills which, when you can't do it, seems impossibly hard, but once you've cracked it, is incredibly easy. The National Curriculum recognises it is vital and says every 11-year-old should have an understanding of water safety and be able to swim 25 metres unaided.

Endorsed by the Amateur Swimming Association and the Royal Lifesaving Society, *Swimming* sets out to help children achieve this aim.

It's based on *Genesis II* and contains around 40 short animations which demonstrate strokes (crawl, breaststroke, backstroke and butterfly) and techniques (gliding, treading water) in some detail. What's good about this is that children can actually see what should be happening underwater. The drawback is swimming is a practical activity and the best way to learn is probably to get in the pool and, with supervision, have a go. These computer materials can, however, be very useful for getting a leg movement just right or sorting out breathing.



Hope you don't find creatures like this in your local swimming baths

Where *Swimming* really comes into its own is in the sections on safety and survival. These information-based screens also feature a few animations and a degree of interactivity, although this is fairly restricted. For instance, the user is asked to save James from drowning by 'throwing' (dragging) a selection of objects to him, from a choice which includes a football, a brick, a plank and a TV set. Some of the self-test units are a bit slow and, where there is a play element, they don't compare very favourably to real computer games. But I am left with a nagging doubt whether you can learn to swim from a computer application

**Alice Smith**

## TALKING PENDOWN

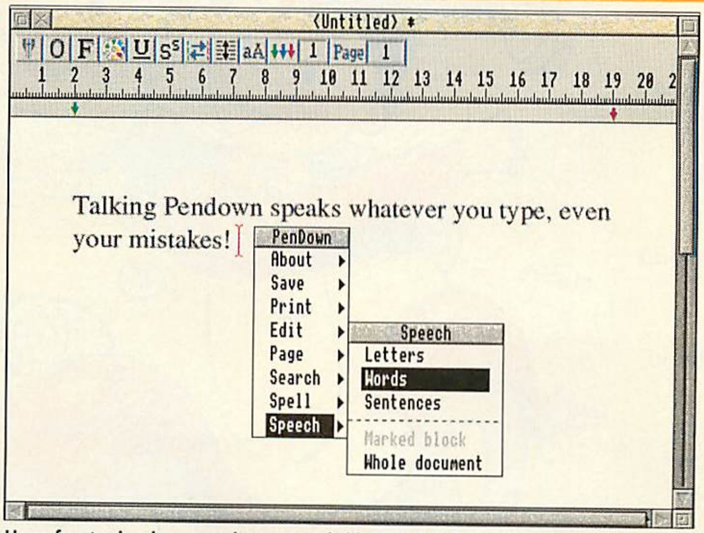
**Supplier: Longman Logotron**
**Tel: (0223) 425558**
**Price: £64; primary licence £190; secondary licence £330 (preferential prices for registered Pendown users)**

The process of software development tends to be evolutionary rather than revolutionary. Now it has produced *Talking Pendown* but there is something radically different about the latest incarnation of Longman Logotron's wordprocessor for education. As the name indicates, *Pendown - The New Generation* has found its voice and can speak, but without extra hardware.

In fact, apart from the talkback facility, this is *Pendown* with refinements. There are a number of enhancements to the Wordlist vocabulary utility (it can speak). *Draw* files are now accepted and the program will respond to standard Acorn keyboard shortcuts. Details of these features are given in *Edit* files on the guide disc.

**' The computer is far more patient than real teachers '**

The speech option is accessed via a straightforward menu which enables you to select letters, words, sentences, marked blocks of text or the whole document for enunciation. Usefully, the first three are not mutually exclusive.



Have fun typing in non-existent words like 'xoufnjej'

*Talking Pendown* talks as you type but, according to its maker, what marks this program out is input and output are the same.

In other words, the program doesn't beep when you make an error but doesn't ignore mistakes. So a student can hear when he types a word inaccurately.

In theory this is excellent but in practice there can be a problem. English as she is spoken is not always English as she is written, so some words – proper names are obvious examples – can be spelt correctly but do not sound right when spoken by the computer.

Likewise, a word can be spelt wrongly but is nevertheless comprehensible to the user. This is compounded by the poor audio quality. The speech synthesizer is, to say the least, unsophisticated.

Despite reservations, *Talking Pendown* has been linked to the much-publicised Somerset Talking Computer Project. This documented impressive improvements in pupils' reading ages when taught using a combination of talking computers and traditional methods.

A group of students with serious reading and memory difficulties, aged between seven and 14, were given 20 minutes' tuition a day for four weeks: six hours in all.

At the end of the course they showed average improvements of 8.3 months in reading age, five months in spelling age and 16 months in short-term memory. It would usually be optimistic to expect pupils with specific reading problems to make six months' progress in six months of lessons.

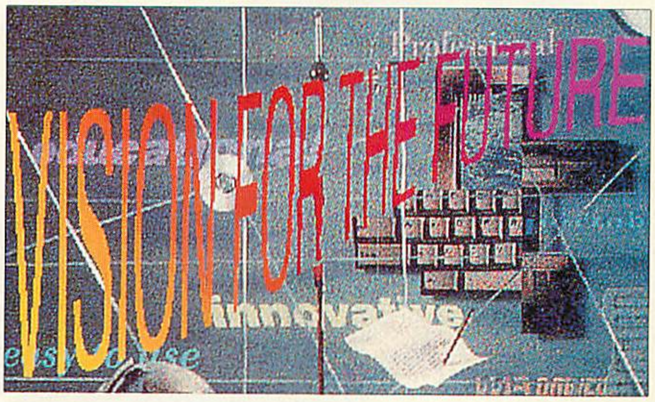
Research has shown that, as if by magic, students are motivated by using computers – many teachers have observed this for themselves in their own classrooms – but a talking computer seems to cast a particularly bewitching spell.

Mike Bolton, responsible for special needs technology and a member of the Somerset research team, recently said: 'The feedback we get is the computer is far more patient than real teachers.' He went on to say: 'the children say they don't feel under such pressure'.

Before long chatty computers will no doubt become common and *Talking Pendown* is a necessary link in this evolutionary chain. But I can't help feeling natural selection means *Talking Pendown* is soon superseded by more sophisticated life forms.

**Alice Smith**

# It's SHOW TIME



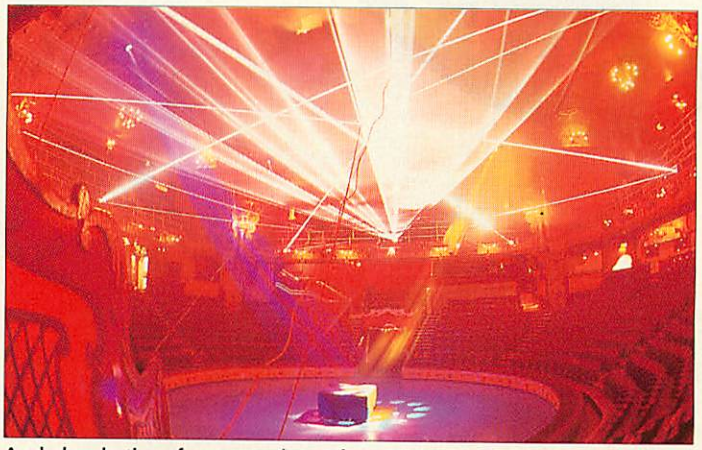

'Bigger than ever,' said Acorn Computers at the birth of the Acorn World show. Now, several months later, a picture is emerging of the new show.

'We want to look after our visitors from the moment they step through the door,' says Kevin Coleman, the show director. This philosophy is, he says, especially aimed at the families who visit the show, with a number of activities laid on specially for children.

The most flamboyant plan is to involve a group of school children who intend to abseil down a specially-built tower. During the descent, the children will have medical monitors attached to their bodies, and the effect the abseil has on their heart rate and blood pressure will all be monitored and analysed on Acorn machines.

One area that is likely to appeal to many visitors is in the 'concept area' of the show. Acorn says that it intends to use this area as both a showcase for its existing technology and as an innovative way to reveal its future directions. Using the latest in computer technology, the concept area is being designed in conjunction with the Science Museum.

'The Science Museum are experts at presenting technical information in an exciting way,' explains Coleman, 'and they use Acorn machines to control many exhibits in the museum.' Acorn has not revealed exactly *what* will be on show in this area, so you will have to wait and see. But for those who are committed followers of Acorn technology, it should make for an interesting stop.



**A whole selection of games to choose from, plus a laser light show whizzing past the assembled bods. Laser Graphics whose handiwork is shown above, is providing the laser show. Better known for pop concerts – Elton John was one satisfied customer – this show should make the Games Arcade unmissable**

## PRINTING POWER

Many people use Acorn machines for DTP layouts, yet others are still mystified by the professional printing world. To shed light on the matter, *Acorn User* will be teaming up with Acorn in its publishing area.

As many of you know, *Acorn User* is designed using Acorn machines and *Impression* software. During the show, we will demonstrate how the magazine takes an article, lays it out as an *Impression* page, then finally adds illustrations and colour tints to get a complete mark up. In the last stage, an on-site printing press will roll into action to produce a printed version of an *Acorn World Show Guide*.

## AT THE THEATRE

With 150 seats, a screen that stands six feet high and a stream of information from the loudspeakers, the theatre is not exactly the place to relax and put your feet up. It *is* however the place to find out about some new developments: for a a full timetable see below.

**Place: Wembley Exhibition Centre, Hall 1**
**Dates: October 29 to 31**
**Advance ticket prices: Adults £5, children £3, families £15**
**Ticket hotline on (0784) 483818.**

## Theatre Timetable

| TIME | FRIDAY | SATURDAY | SUNDAY |
|---|---|---|---|
| 11.00 to 11.30 | Networking in the wide world | To be announced | Beginners start here |
| 11.40 to 12.10 | Publishing for professionals | Producing a pop CD | Why buy a Pocket Book for my child? |
| 12.20 to 12.50 | Open Access – Special Needs | School governors start here | To be announced |
| 13.00 to 13.30 | Taking pictures for Photo CD | Photo Retouching – Digital Arts | Publishing magazines – Redwood Publishing |
| 13.40 to 14.10 | The Electronic Prospectus | Acorns in the Science Museum | Education Down Under |
| 14.20 to 14.50 | Arm Powered – The Vision | Preparing material for a publishing bureau | Multimedia: a solution in search of a problem |
| 15.00 to 15.30 | Graphic design | Educational software on CD | **Advanced theatre tickets can be ordered by writing to Acorn World, Exhibition Planning Services, PO Box 162, Staines, TW19 5JX.** |
| 15.40 to 16.10 | School Administration | Psion: truly personal portable computers | |
| 16.20 to 17.00 | Acorn Quiz | Technical Question Time | |

# NETGAIN FOR ETHERNET

Netgain for Ethernet provides the fastest transfer rates of any network currently available on the Acorn platform. The product is designed to boost performance by huge margins when used in conjunction with Acorn's Level 4 AUN fileserver on industry standard Ethernet.

| Time taken to load these applications over an Acorn network | Level 4 Econet | Level 4 AUN Ethernet | Ethernet with Netgain |
|---|---|---|---|
| | Seconds | Seconds | Seconds |
| Artworks | 136 | 87 | 8 |
| Maestro | 15 | 9 | 3 |
| Pipedream | 20 | 6 | 2 |
| Squirrel | 35 | 10 | 2 |

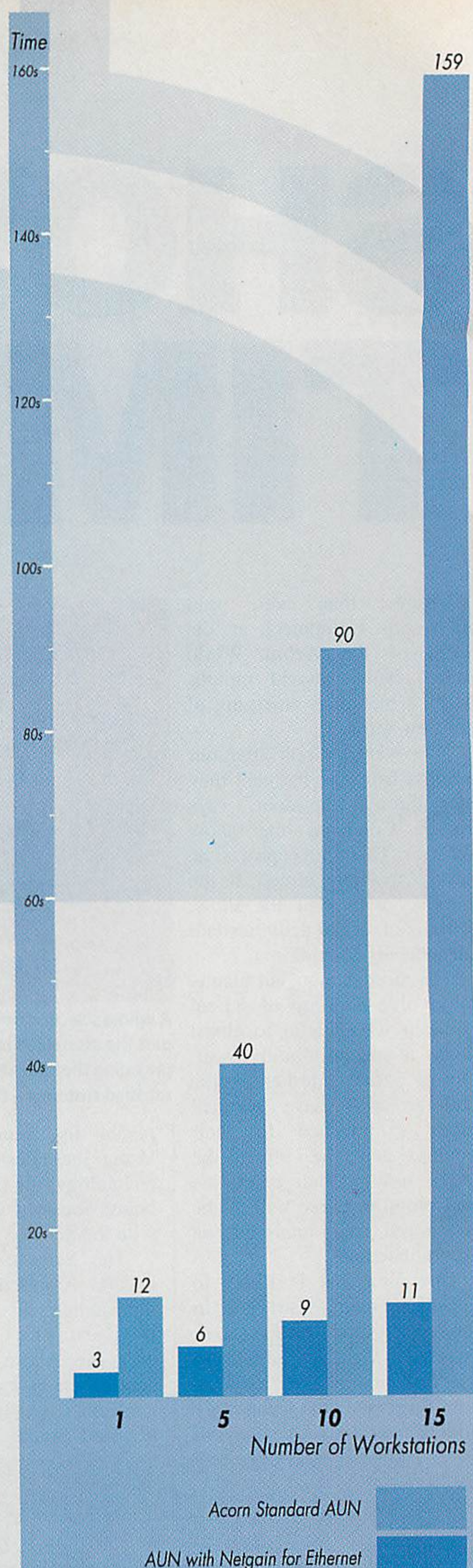
The only hardware required is an expansion card in the Netgain server, which would typically also run the Acorn Level 4 fileserver.

**No more than 64K of RAM is taken from any workstation.**

Standard Ethernet interfaces may be utilised.

Typical transfer rate from a standard Ethernet system is approximately 200K/sec but Netgain achieves up to 900K/sec. In addition to this transport throughput increase, intelligent caching and a general reduction in bottlenecks result in staggering reductions in load times for typical applications.

The system manager simply copies their applications into the Netgain filer on the server, and from then on these products will automatically appear within the Resources directory viewer from the Apps icon on the icon bar, just as if the programs were in ROM.




*Simultaneous loading of* ***Impression*** *over an Ethernet network*

| | |
|---|---|
| Server Pack<br>including Server Expansion Card and software for the first ten stations | £ 200.00 + VAT |
| Additional 10 User Packs | £ 100.00 + VAT |

digital services

9 Wayte Street, Cosham, Portsmouth
Hampshire PO6 3BS Tel 0705 210600

# LEARNING CURVE

One step further along the curve, John Rennie shows how to get to grips with the basic tools in Draw, and uses them to create the stylish figure below




There are a number of good drawing applications for the Archimedes: *Vector* and *Artworks* to name just two. But as well as delivering all you need from a basic drawing package, *Draw* has a big point in its favour: it's free.

Like any tool the easiest way to get to grips with *Draw* is to play with it. At first, constructing the curves is a bit like learning to knit with spaghetti, but you will be surprised how dextrous you become.

Once you get the hang of it *Draw* becomes very useful. You can create clipart, graphs and charts. Last month, Rob Miller showed you how to create business stationery. First we will look at the tools in the application, then use them to create a simple figure: *Dude*.

## Starting off

Load *Draw* on your iconbar by clicking on it twice from the Apps filer. Clicking once on the resulting icon opens a *Draw* page. Down the left of the page you see the toolbox; this is really a shortcut menu. Clicking once on a tool selects it. If you then click Menu over the page and go into the Enter submenu, you will see the relevant item is ticked: line, curve, ellipse or rectangle.

The ellipse and rectangle tools are straightforward. Click the pointer on the desired icon and move over the page itself, where the pointer becomes a crosshair. Click once, and moving the crosshair out produces the shape. Clicking again will complete the shape.

The other tools are slightly different. For instance, to use the straight line tool you double-click on the screen to start a line, single-click to end it. Once you have completed the shape you want you double-click and the shape's grey outline changes to black. Using the second icon instead of the straight line tool will produce a closed polygon on double-clicking by drawing a line back to the start. The resultant collection of joined lines is called a path, and below we will see how to construct paths and edit them. The Curve tools work in the same way.

Undo is another useful command. If you finish a path but it still looks wrong, you simply remove it by choosing to Undo from the Misc menu.

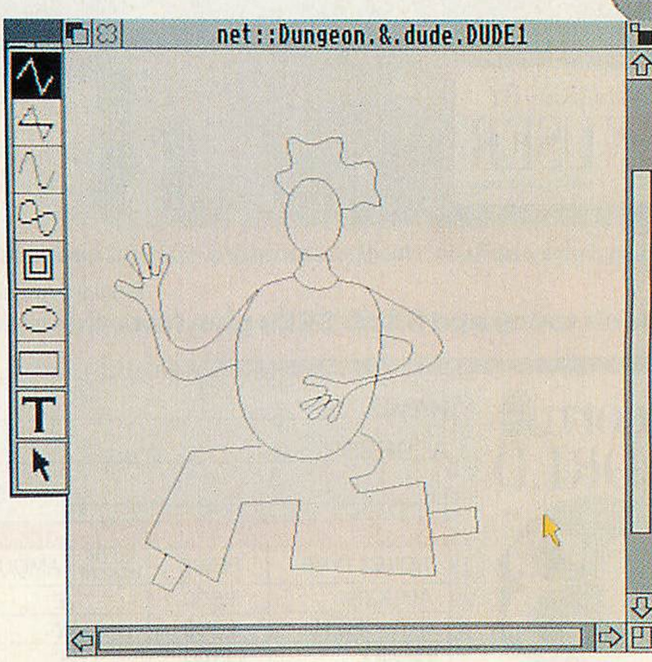
## Step one

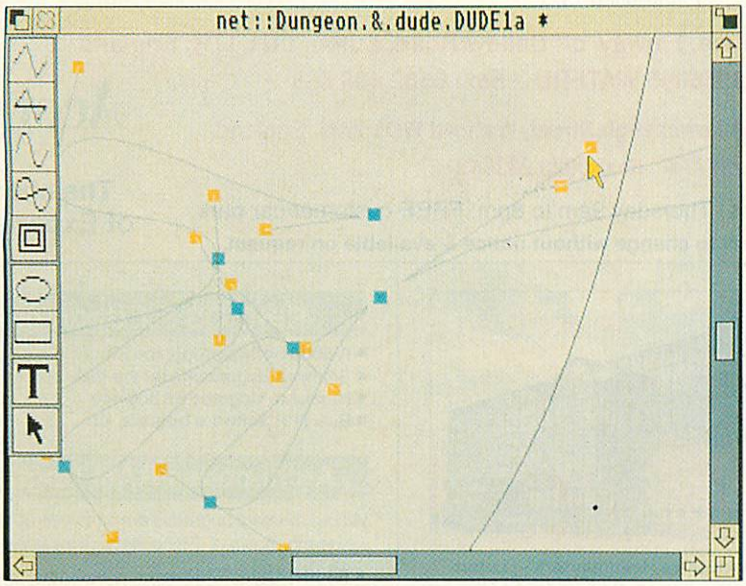
In the picture on the right you see the basic outline of our figure.

First you need to place the basic shapes on the screen. The head is an ellipse, the trousers and legs constructed with the straight line tools, but the majority of the figure is constructed using the Curve tools.

The arms are constructed using the open curve tool while the body is constructed using the Closed Curve tool.

Call up a fresh page from Draw. Then using the same tools try to create as close a copy as you can.






## Step two

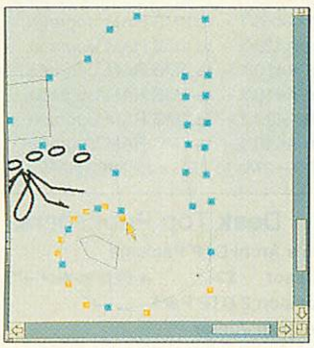
Using Select we edit the paths we have on the screen. Click on the pointer icon then on a figure. You see a red 'bounding box'. Using the top right 'ear' rotate the figure. The bottom ear lets you stretch or squeeze the shape. Clicking in the box lets you move it.

Path editing lets you fine-tune the shape. You decide Dude's wrist is a bit skinny? Click on the pointer tool, then the arm to place it in a bounding box. Click Edit in the Select submenu and you are in Path Edit Mode. Each section has a blue 'end point' at either end. Click on this with Adjust and the curve is highlighted in red. Clicking with Adjust on a yellow control point lets you bend the curve. When you are happy, select the pointer tool and click and drag a box over all the elements of the figure. When you release, each figure has a bounding box. Enter Select and click on Group. The figure is in a single box and can be moved.

**Holding Shift at the same time will keep the control lines either side of the end point at a constant angle to each other**

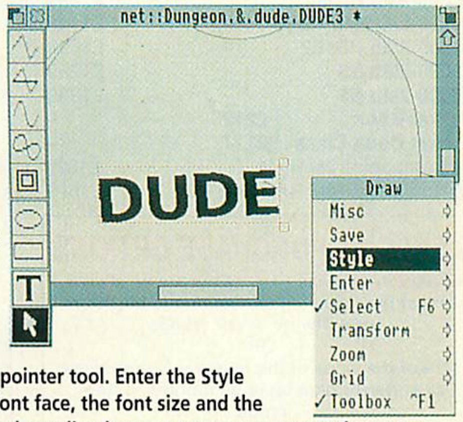
## Step three

For finer work it is easier to work on a magnified image. For the boots choose Zoom from the menu. Get a magnification of two to one. The top of the boot is drawn using Open Line, then Curve for the toe.



Zoom is useful for fiddly work like the laces. Construct the laces using Open Curve. Select the line, select Line Width from Style and choose thicknesses. The eyelets are circles. Draw one, squeeze to shape, thicken, copy as many as you need. Then group the lot.

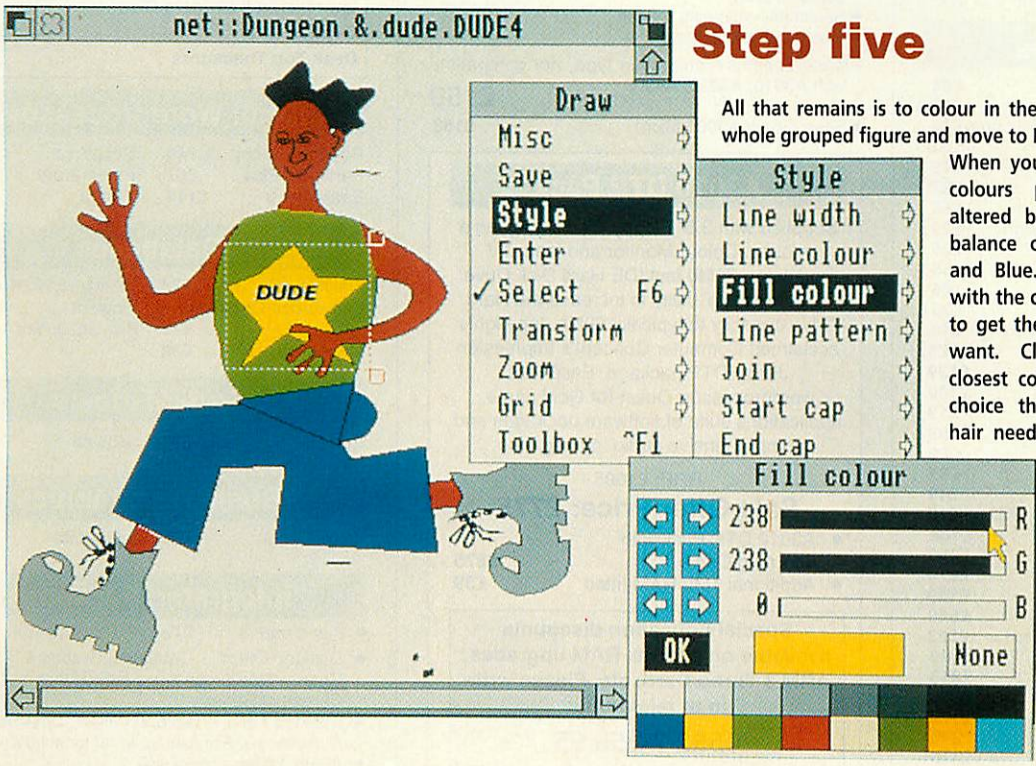
## Step four




Text can be added using the T tool. Simply type in what you want and the text will appear in the system font. At this point you are still able to edit it, correct spellings and so on; it behaves just like a normal piece of word-processed text.

However, system text is neither very attractive nor manipulable. So, select the whole text using the pointer tool. Enter the Style submenu and you can change the font face, the font size and the colour of the text. You now find the bounding box can rotate or squeeze the text as with any other shape.

'Dude' is typed in, altered to Frutiger, then stretched to fit the rather attractive star jumper that the man himself is wearing.




## Step five

All that remains is to colour in the various parts of Dude. Select the whole grouped figure and move to Fill Colour in the Style submenu. When you get to the palette, you find the colours provided can be altered by adjusting the balance of Red, Green and Blue. Try playing with the combinations to get the colour you want. Click on the closest colour from the choice then adjust. The hair needs to be coloured, then, in Select, sent to Back. When you have completed colouring, regroup the whole figure and save it. This can be shrunk, copied, cut and pasted to your heart's content. And, should you be able to improve on perfection, you can ungroup the original and have another go. Next month we take a step further into visuals with a look at Paint.

**Colour everything flesh-tone, ungroup, then colour individually, to save colouring flesh piece-by-piece**

## Acorn Multimedia

| | |
|---|---|
| ● Multimedia Expansion | £485 |
| ● Multimedia Expansion + 16 bit SCSI | £585 |

## Hi-Speed, Low Cost Archi Hard Disc Drive

Watford's advanced interface allows IDE drives to work on any Archimedes machine, speeds in excess of SCSI devices can be obtained at a fraction of the cost of a SCSI drive.

Up to four drives are supported by the IDE filing system IDEFS, up to two drives can be attached to each expansion card, up to four cards can be installed in a machine.

A powerful security feature has been provided with the two unique commands *IDELock and *IDEUnlock, ideal for educational establishments where hacking or tempering may be prevalent that may lead to loss of data. Once locked, the configuration can not be changed until a secret password is used. The !IDEForm Write Protect option is particularly useful in conjunction with *IDELock as it will prevent any unauthorised deletion of data.

By an innovative use of on-board memory, the card will remember its configuration, even if moved to another slot or even a different machine, this also includes the unique security features.

### Hardware

- Supports proposed ANSI ATA (IDE) specification
- Fast 16 bit MEMC interface interrupt driven to support background disc operations
- 5 Mbytes per second peak transfer rate
- Up to two drives (master and slave) per card
- Multiple cards per machine (up to four)

### Software

- All software supplied in ROM
- Filing system 'IDEFS'
- Desktop filer with drive ready detection and disc name under icon
- !IDEForm, WIMP based configuration and formatting software
- Drives can be individually write protected
- Power saving standby modes supported with configurable timeout
- Drives can be used without translation in native mode for minimum overhead
- !IDEFSDisk, creates PC emulator hard discs

### A300/A400 Internal IDE Drive

| Part No. | Capacity | Access Speed | Price |
|---|---|---|---|
| ADA 0520 | 44Mb | 28mS | £159 |
| ADA 0550 | 80Mb | 17mS | £195 |
| ADA 0530 | 105Mb | 16mS | £235 |
| ADA 0570 | 210Mb | 15mS | £359 |
| ADA 0880 | 330Mb | 15mS | £465 |

All above 3.5" Drives are supplied complete with Controller Card & cable for use with A300/A400/A500 series machines.

| | |
|---|---|
| **AAA 0300** External Case & PSU for A3000 | £85 |
| **AEA 1060** Archi IDE Hard Disc Podule only | £89 |

### A5000 Internal IDE Drive

Can be used as 2nd Internal IDE Drive

| | | | |
|---|---|---|---|
| ADA 1030 | 80Mb | 17mS | £149 |
| ADA 0940 | 105Mb | 16mS | £189 |
| ADA 0950 | 210Mb | 15mS | £259 |
| ADA 0580 | 330Mb | 15mS | £399 |

### A3000 External IDE Drives

| | | | |
|---|---|---|---|
| ADA 0780 | 44Mb | 28mS | £225 |
| ADA 1020 | 80Mb | 17mS | £265 |
| ADA 1050 | 105Mb | 15mS | £309 |
| ADA 1070 | 210Mb | 15mS | £399 |

New IDE ROM Software for RISC OS 3 (upgrade) for existing users £16

## Internal Hard Disc Drives for A3000/A3010

State of the art, 4 layer internal IDE Hard Cards for the A3000. Software supplied in, On-board ROM.

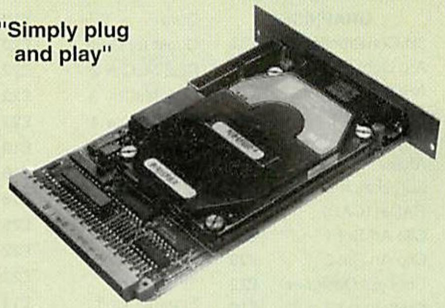
| | | | |
|---|---|---|---|
| ADA 0770 | 30Mb | 19mS | £159 |
| ADA 0750 | 60MB | 18MS | £199 |
| ADA 0720 | 80Mb | 18mS | £219 |
| ADA 0730 | 120Mb | 16mS | £285 |

Supplied ready assembled. No soldering required. Simply plug into the allotted space.

24-Hour Credit Card Order Line
(0582) 74 55 55 / 48 77 77

## Archi IDE Hard Cards

"Simply plug and play"



Watford's easy to instal, low cost, high performance, revolutionary IDE Hard Cards for the A300 & A400 series Archimedes.

| | | | |
|---|---|---|---|
| **ADA 0800** | 30Mb | 19mS | £189 |
| **ADA 0890** | 60Mb | 18mS | £229 |
| **ADA 0670** | 80Mb | 18mS | £249 |
| **ADA 0680** | 120Mb | | £295 |

(All above Hard Cards can be used as Removable Hard Drives. Ideal for Military and Education use.)

## Archi to BBC Serial Link Mk 2

Using this simple data link, it is possible to solve all your BBC to Archimedes data transfer problems. The kit is supplied with a disk, and the necessary cable to connect the two computers.

● Risc OS 2 Version **£15** ● Risc OS 3 Version **£16**
(P.S. For A3000 Serial Upgrade **(£19)** required)

## A3000 Accessories

- 3.5" External Drive **£95** ● Monitor Stand **£15**
- Technical Manual **£32** ● Serial Upgrade **£19**
- A3000 Dust Cover **£5** ● Micro+monitor cover **£9**
- Acorn Carrying Case for A3000 **£10**
- A3000 User Port/Midi Upgrade Card **£44**
- A3000 User/Analogue/IIC I/O Card **£38**
- A3000 External Podule Case **£15**

## A3000 I/O Card (User, Analogue & IIC)

This NEW versatile I/O Card from Watford, fits inside the A3000 and includes an Analog to Digital Converter, a User Port, and an InterIC (IIC) connector.

The card allows many of the peripherals developed for the BBC to be used with the Archimedes A3000. The ADC and User Port have the same pin out and connectors as the BBC computers.

Extensive RISC OS software is supplied to provide BBC OSBYTE calls for support of the ADC and User Ports, including the BASIC keyword ADVAL. The software provides extended RISC OS support for separate interrupts from both the ADC and User Ports, permitting easy interrupt driven operation.

The card is provided with all the software in ROM and is automatically loaded when the machine is turned on.

Peripherals connected to the ports can obtain up to 500mA of power at +5V. A fuse is fitted to the card to protect the A3000 from damage arising from accidental short circuit of the power output.

Features
- An 8 bit User Port with a standard 20 way IDC connector, compatible with the User Port on the BBC computers and the Archimedes I/O Podule.
- A 10 bit Analog to Digital Converter with a standard 15 way D type connector, compatible with the ADC on the BBC range of computers and the Archimedes I/O podule.
- An InterIC (IIC) Port with a 5 pin DIN socket to connect the A3000 to external IIC devices. **£38**

## Cortian CKAI Interface

Eliminates need to have a User port in A3000/305/310/400/540 when using Concept Keyboard. **£28**

## Concept Keyboards

- A4 Standard Pack **£89** Primary Pack **£95**
- A3 Standard Pack **£94** Primary Pack **£99**
- Designer Pack A4 **£104** A3 D Pack **£104**
- Universal 2010 Keyboard A3 **£107**
- Universal 2010 Keyboard A4 **£104**

## NEW Special Finance Deal

**Now everyone can afford an Archimedes Micro with Watford Electronic's up to 60 months instant credit facility.**

**(Please telephone 0582 74 55 55 for details)**

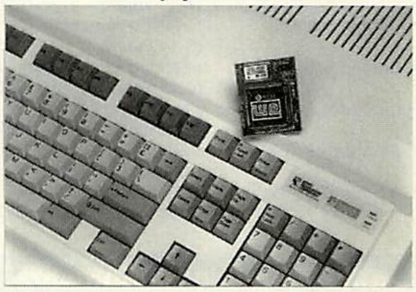
## Archimedes External Disc Drive Interface

With this interface it is possible to connect almost any 5.25"/3.5" disc drive with its own power supply to the Archimedes. Upto 4 disc drives can be connected. Fully Buffered Board. NO SOLDERING is involved. Supplied complete with necessary lead. **Price £21**

**Back Plate Extension**
● A300/400 £15; ● A3000 £14

## ARM 3 Turbo Card MkII

### Simply The Best



Here it is at last – the all new Mark 2 version of Watford's highly acclaimed ARM 3 processor board for the Archimedes and now also the A3000 series computers. Using the latest surface mount technology on a high quality four layer circuit board we have reduced the overall size to a mere 53mm x 45mm, and the cost to only £145. Mk II upgrade will increase the speed of your micro by a factor of 3 to 6.

Any competent A300 or A400/1 series micro owner can fit the upgrade himself, as we provide full fitting instructions and a special ARM chip extraction tool. However for A3000 micros and those not wishing to perform the upgrade themselves, we will collect, upgrade and return your micro by courier service, at an additional cost of £24.

(A300 and old A440 series owners please note – you will need to upgrade to MEMC1A for ARM3 to work.)

**RRP £249**

**Special Offer £125**

## Network Accessories/Software

| | |
|---|---|
| BBC B Econet Kit | £42 |
| Master Econet Module | £40 |
| Archimedes Econet Module | £40 |
| A3020/4000 Econet Module | £49 |
| Acorn A4 Econet Module | £50 |
| Archimedes Ethernet Card | £139 |
| A3020/4000 Ethernet Card | £179 |
| AUN/Level 4 Fileserver | £379 |
| Econet Starter Kit | £137 |
| 100m Econet Cable | £99 |
| Econet Socket Box | £7.50 |

(P.S. Full range of Network Accessories/Software/ Site Licences available. Telephone for details.)

**Leasing finance at very attractive rates now available to Businesses (subject to status), Schools, Colleges, Universities, Government Depts. and Local Councils.**

Continued→ → → → → → → → → →

## BBC Education Software

| | | |
|---|---|---|
| **A vous la France** | French programs for beginners | £29 |
| **Au restaurant/Accident de route** | French games for 12 years + | £26 |
| **Bolougne and oh les** | French program for beginners | £26 |
| **Computer control** | Program simulating computer control | £26 |
| **Computers at work** | Primary education program | £17 |
| **Espana Viva** | Spanish educational programs | £20 |
| **Folks Tales** | Listening and reading for ages 7+ | £22 |
| **Geordie Racer** | Look and read for ages 7+ | £22 |
| **Hall of Mirrors** | Practice word & number skills | £22 |
| **Letters and pictures** | Educational programs for 6-8 years | £15 |
| **Make a wildlife garden** | Explore wildlife/weather/garden growth | £22 |
| **Maths with a story 1** | Primary level maths programs | £20 |
| **Maths with a story 2** | 4 further maths programs | £20 |
| **Puncman 1 & 2** | Learning Punctuation (7-13 years) | £15 |
| **Puncman 3 & 4** | Learning Punctuation (8-14 years) | £15 |
| **Puncman 5, 6 & 7** | Learning Punctuation (8-15 years) | £15 |
| **Fun School 3 (Under 5)** | Varied range of Education subjects | £17 |
| **Fun School 3 (5-7)** | Varied range of Education subjects | £17 |
| **Fun School 3 (Over 7)** | Varied range of Education subjects | £17 |

## Archi Educational Software

- 10 out of 10 Early essentials £18
- 10 out of 10 English £18
- 10 out of 10 Maths £18
- Animated Alphabet (3-6 yrs) £21
- An Eye for Spelling £31
- Arcventure (8-12 yrs) £29
- Best Four Adventure £34
- Best Four Language £34
- Best Four Maths £34
- Bookbinder £43
- Bookstore – Primary £35
- Bookstore – Secondary £52
- Britain since 1930's £26
- Bumper Disc £14
- Bumper Disc 2 £14
- Craftshop 1 £18
- Craftshop 2 £18
- Converta-Key £9
- Data Word £14
- Desktop Stories £35
- DigiSim £35
- Dream Time (5-7 yrs) £23
- Export, Trade & Industry £34
- Farm (5-7 yrs) £19
- Fleet Street Phantom (9-13 yrs) £25
- Fun School 3 Red (up to 6 years) £17
- Fun School 3 Green (6-8 years) £17
- Fun School 3 Blue (8 years +) £17
- Gate Array Teaching System £68
- Glimpse Clip Art Utility (7-16 yrs) £8
- Highlighter (6-16 yrs) £30
- Investigating Maths £34
- Jigsaw £18
- Kid Pix £34
- Linkword French £32
- Linkword German £32
- Linkword Spanish £32
- Making of the UK £35
- Mapping Skills £25
- Mapventure (9-13 yrs) £22
- Medieval Realms £35
- Microbugs £24
- Money Matters £15
- Nature Park Adventure (7-9 yrs) £24
- Number in the Nat. Curr. £34
- Numerator £39
- Podd £23
- Picture Book £15
- Recall (6-13 yrs) £37
- Sellardore Tales £24
- Snippet £32
- Space Mission Mada (9-13 yrs) £23
- Sting of the Dump (9-13 yrs) £22
- Time Traveller £31
- Victorians £19
- Viewpoints (9-12 yrs) £33
- Wizard's Revenge (7-10 yrs) £17
- Worldmaker £46
- World Map Study £59
- Worst Witch (7-10 yrs) £21

## Archimedes Software

**GRAPHICS**

| | |
|---|---|
| 3D Construction Kit | £35 |
| Arc Light | £44 |
| ARCtist | £19 |
| ARCticulate | £19 |
| Art Works | £124 |
| Atelier | £60 |
| Autosketch II | £65 |
| CADet (CAD) | £129 |
| Clip Art Set 1 | £28 |
| Clip Art Set 2 | £28 |
| Concept Designer | £22 |
| Craftshop 1 & 2 | £19 |
| Euclid 2 | £50 |
| Graph Box | £56 |
| Graphbox Professional | £102 |
| HotLink Presenter | £40 |
| Illusionist | £67 |
| Kermit | £46 |
| Mogul | £20 |
| PCAD Educ. | £395 |
| Pro Artisan | £70 |
| ProCAD | £392 |
| Prime Art | £59 |
| Render Bender 2 | £76 |
| Revelation 2 | £75 |
| Titler | £119 |
| Tween | £29 |

**GAMES**

| | |
|---|---|
| Air Supremacy | £16 |
| Arcade 3 Compilation | £12 |
| Battle Chess | £21 |
| Black Angel | £26 |
| Boogie Buggy | £14 |
| Break 147 + Supa Pool | £19 |
| Bughunter in Space | £10 |
| Cataclysm | £18 |
| Caverns | £10 |
| Champions | £24 |
| Chess 3D | £16 |
| Chocks Away Compendium | £27 |
| Chocks Away Extra | £14 |
| Chopper Force | £19 |
| Chuck Rock | £17 |
| Conqueror | £15 |
| Cyber Chess | £24 |
| Cycloids | £20 |
| Demon's Lair | £20 |
| Ego Repton 4 | £18 |
| Elite | £32 |
| Enter the Realm | £15 |
| E-Type Compendium | £18 |
| E-Type Designer | £13 |
| Fervour | £19 |
| Galactic Dan | £19 |
| Gods | £19 |
| Grievous Bodily Arm | £19 |
| Hero Quest | £24 |
| Holed Out Golf Comp | £18 |
| Inter Dictor 2 | £25 |
| Iron Lord | £24 |
| Jahangir Khan Squash | £19 |
| Lemmings | £19 |
| Oh no more Lemmings | £15 |
| Lotus Turbo Challenge | £18 |
| Mad Prof Mariarti | £14 |
| Masterbreak | £14 |
| Man at Arms | £14 |
| MahJong Patience | £15 |
| Manchester United II | £18 |
| Manchester United Europe | £19 |
| Nebullus | £19 |
| Nevryon II | £20 |
| Omar Sharif's Bridge | £19 |
| Pandoras Box | £15 |
| Pipe Mania | £17 |
| Play It Again Sam 15-17 | £17 |
| Populous | £22 |
| Pysanki | £14 |
| Quazer | £10 |
| Quest for Gold | £20 |
| Real McCoy 2 | £22 |
| Real McCoy 3 | £22 |
| Real McCoy 4 | £22 |
| Redshift | £10 |
| Return to Doom | £16 |
| Repton 3 | £18 |
| Saloon Cars Deluxe | £25 |
| Sim City | £22 |
| Spitfire Fury | £22 |
| Superior Golf | £14 |
| Swiv | £19 |
| Techodream | £20 |
| Trivial Pursuit | £22 |
| Twin World | £14 |
| U.I.M. | £23 |
| Virtual Golf | £25 |
| White Magic 2 | £15 |
| Worldscape | £16 |
| XFire | £19 |
| Zelantis | £15 |
| Zool | £20 |

**Miscellaneous**

| | |
|---|---|
| Ancestry | £58 |
| Arccomm 2 | £45 |
| Arcterm 7 | £58 |
| Armadeus Sound | £58 |
| Avante Garde Fonts | £23 |
| BBC DFS Reader | £6 |
| Broadcaster Loader | £65 |
| Chameleon | £33 |
| Chart Well | £25 |
| Chatter | £34 |
| Compression (CC) | £34 |
| Desk Edit 2 | £26 |
| FlexiFile | £75 |
| Genesis | £10 |
| Genesis Plus | £25 |
| Genesis 2 | £99 |
| Investigator 2 | £20 |
| Magpie 2 | £40 |
| Notate | £41 |
| Numerator | £39 |
| Pin Point | £65 |
| Polyglot | £16 |
| Presenter 2 | £29 |
| Presenter GTi | £66 |
| Presenter Story | £145 |
| Rainforest | £17 |
| Revelation 2 | £75 |
| Rhapsody 2 | £45 |
| Rhapsody 3 | £79 |
| Score Draw | £44 |
| Show Page | £127 |
| Speech! | £15 |
| The Victorian | £17 |
| Time Tabler | £499 |
| Toolkit Plus | £36 |
| Touchtype | £35 |
| Tracker | £37 |
| Turbo Driver BJ10E | £41 |
| Type Studio | £39 |
| Vox Box | £46 |
| Wimp Programmer's Toolkit | £16 |
| WorldScape | £17 |

**LANGUAGES**

| | |
|---|---|
| Desktop C R4 | £180 |
| Macro Assembler | £40 |
| BASIC Compiler | £77 |
| Logotron Logo | £45 |
| Risc Basic Compiler | £66 |
| Risc Forth Compiler | £79 |
| Cambridge Pascal | £95 |

## BBC/Master Games

| | | | |
|---|---|---|---|
| Acornsoft Hits 1 | £10 | Sim City | £10 |
| Acornsoft Hits 2 | £10 | Superior Collection 1 | £10 |
| Air Supremacy | £10 | Superior Collection 2 | £10 |
| Play It Again Sam 1 | £10 | Play It Again Sam 9 | £10 |
| Play It Again Sam 2 | £10 | Play It Again Sam 10 | £10 |
| Play It Again Sam 3 | £10 | Play It Again Sam 11 | £10 |
| Play It Again Sam 4 | £10 | Play It Again Sam 12 | £10 |
| Play It Again Sam 5 | £10 | Play It Again Sam 13 | £10 |
| Play It Again Sam 6 | £10 | Play It Again Sam 14 | £10 |
| Play It Again Sam 7 | £10 | Play It Again Sam 15 | £10 |
| Play It Again Sam 8 | £10 | Play It Again Sam 16 | £10 |

## Silicon Vision Archimedes Software

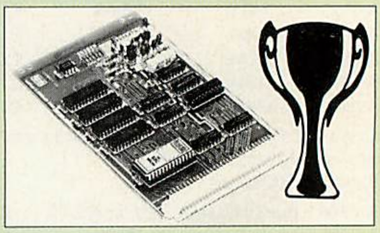
| | | | |
|---|---|---|---|
| Arc-PCB | £79 | Arc-PCB Pro | £169 |
| Arc-PCB Schematics | £229 | GerberPLOT | £49 |
| ExcellonDRILL | £49 | PowerROUTER | £125 |
| SolidCAD | £65 | FilmMAKER | £55 |
| SolidsRENDER | £65 | SolidTOOLS | £169 |
| SuperDUMP | £17 | SuperPLOT | £17 |
| RiscBASIC Compiler | £66 | RiscFORTH Comp | £66 |
| RoboLOGO | £35 | DataVision | £66 |
| ShareHolder Pro | £129 | Payroll Manager | £66 |

## TEX EPROM ERASERS

Over erasure of EPROMs very rapidly turns them into ROMs!
The TEX erasers operate following the manufacturers specifications to give the maximum possible working life by not erasing too fast.

- **ERASER GT** – Deluxe version erases up to 8 chips. Has automatic safety cut-off to switch off the UV lamp when opened. £36
- Spare UV tubes. £12

## Archi Real-Time Digitiser



**Now supplied with NEW RISC OS Version Software**

Watfords' Archimedes Video Digitiser is the most sophisticated digitiser ever designed for a micro. It provides a fast and flexible means of capturing images from a video camera or recorder for display and manipulation on the Archimedes range of Micros. Off-air televison signals may also be digitised via a video recorder or TV tuner. Please write for further details.

**Price £75**

A Set of Colour Filters for colour image grabbing using a video camera £16

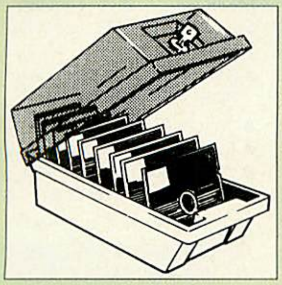
## Vision Digitiser

Working in real time, the Vision Digitiser is available in either monochrome or colour versions with a software upgrade to colour. Create high quality images simply by connecting the digitiser to a PAL video source, such as a camcorder, video or digital camera. Includes powerful RISC OS software.

**Mono Vision Digitiser £44.00**

**Colour Vision Digitiser £74.00**

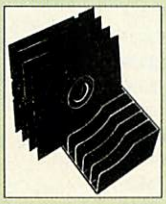
## Antistatic Lockable Disc Storage Units



- **M35** – holds up to 50 5.25" discs **£4.95**
- **M85** – holds up to 95 5.25" discs **£6.95**
- **M25*** – holds up to 25 3.5" discs **£4.95**
- **M50** – holds 50 3.5" discs **£6.50**
- **M100** – holds 100 3.5" discs **£6.99**
- **M10** – holds 8 of No. 10 Data Cartridges **£15**

* Not lockable

## Disc Plonker Rack



When using ones micro, there is a tendency to have more than one Disc on the desk. This exposes them to the hazards of fingerprints, scratches, dust, coffee and an untidy desk. Why not protect your valuable data from all these hazards with the help of our extremely handy and low cost DISC PLONKER RACK. Holds up to eight 5.25" discs. **£2**

## 3M – Diskettes

*Lifetime warranty on 3M Discs*

- *10 x 5.25" S/S D/D 40T (744)* ***£5***
- *10 x 5.25" D/S D/D 40T (745)* ***£5***
- *10 x 5.25" S/S D/D 80 Track (746)* ***£6***
- *10 x 5.25" D/S D/D 80 Track (747)* ***£7***
- *10 x 5.25" 1.6M D/S D/D High Density for IBM XT and AT* ***£8***
- *10 x 3.5" S/S D/D 40/80 Track* ***£6***
- *10 x 3.5" D/S D/D 40/80 Track* ***£6***
- *10 x 3.5" Double Sided High Density* ***£10***

## Top Quality Diskettes

Watford's life time guaranteed disc are supplied complete with self stick labels & plastic library case.

- *10 x **M3** 3.5" D/S D/D 80 Track* ***£6***
- *10 x **M9** 3.5" D/S High Density* ***£10***
- *10 x **M4** 5.25" S/S D/D 40 Track* ***£5***
- *10 x **M5** 5.25" D/S D/D 40 Track* ***£5***
- *10 x **M7** 5.25" D/S D/D 80 Track* ***£6***
- *10 x **M8** 5.25" D/S H/D Hi-Density* ***£9***

## Special Bulk Offer Discs

(Lifetime warranty on Discs)

**BULK PACK DISCS in lots of 100**

| Type | S/S 40T | D/S 40T | D/S 80T |
|---|---|---|---|
| • Without Sleeves 5.25" | £25 | £30 | £35 |
| • With Sleeves 5.25" | £28 | £33 | £38 |
| • 3.5" D/S D/D | £21 for 50 | £39 for 100 | |
| • 3.5" D/S H/D | £40 for 50 | £75 for 100 | |

## Disc Drive Power Leads

Supply from BBC power supply to standard Disc Drive Connection: Single **£3.00**; Dual **£3.75**

## Disc Drive Interface Leads

BBC to Disc Drives Ribbon Cable
Single **£4** Twin **£6**

## 3.5" Disc Drive

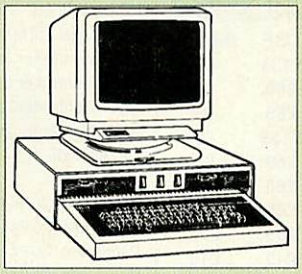


These top quality 3.5" Double sided, 80 track, are attractively finished in BBC beige. They are supplied complete with all cables and a Utilities Disc.

| Type | Description | |
|---|---|---|
| | **Disc Drive without PSU** | |
| • **CLS35:** | Single Disc Drive, 400K | **£59** |
| • **CLD35:** | Twin Disc Drives, 800K | **£109** |
| | **Disc Drive with PSU** | |
| • **CS35:** | Single Disc Drive, 400K | **£82** |
| • **CD35:** | Twin Disc Drives, 800K | **£126** |

(P.S. CS35 is supplied in a twin case with a blanking plate to enable easy expansion to a dual drive at a later stage)

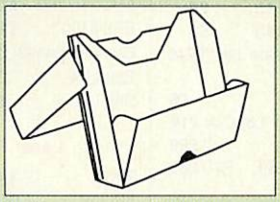
## Disc Drives in Monitor Stand



• **CDPM 800S** – Twin 5.25", 800K Double sided 40-80 track switchable disc drives mounted in an attractively finished Beige colour plinth for the BBC B & Master 128K micros. Supplied complete with integral power supply, cables and Utilities disc. The mains switch with neon On/Off light indicator, and the two 40/80 track switches are mounted on the front panel for ease of use. **£150**

• **DP35 800** – Same as above except, one disc drive is a 5.25" and the other is 3.5". **£145**

## Plastic Library Cases



- **DLC1** – Holds 5 x 3.5" Discs. **£1.50**
- **DLC2** – Holds 10 x 3.5" Discs. **£1.90**
- **DLC3** – Holds 5 x 5.25" Discs. **£1.60**
- **DLC4** – Holds 10 x 5.25" Discs. **£2.00**

## Disc Albums

Attractively finished in leather-look PVC Vinyl

- **DW1** – Holds 6 x 3.5" Discs **£2.50**
- **DW2** – Holds 6 x 5.25" Discs **£3.00**
- **DW3** – Holds 20 x 5.25" Discs **£3.50**
- **DW4** – Holds 40 x 3.5" Discs or 5.25" Discs **£4.50**

## Cleaning Kits & Aerosols

- 5.25" Disc Cleaning Kit **£4**
- 3.5" Disc Cleaning Kit **£4**
- PC Cleaning Kit **£7**
- Professional PC Cleaning Kit **£12**
- Aerosol Dust Spray Can **£3**
- Servisol Foam Cleaner Can **£3**
- Antistatic Aerosol Spray **£3**

## Acorn & Watford DFSs

- Watford sophisticated DFS ROM **£16.00**
- Watford DFS Kit complete **£49.00**
- DFS Manual (comprehensive) **£6.95**
- Acorn DNFS ROM **£17.00**
- Acorn ADFS ROM only **£25.00**
- Acorn 1772 DFS ROM Kit **£49.00**
- Acorn DFS Kit complete **£48**

## Watford's MkII 1772

**Single/Double Density DFS**

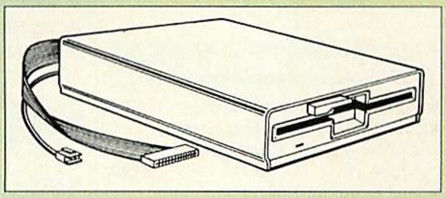
Many of our customers have wanted to use our superior DDFS and Acorn ADFS together. Now our Mk II DDFS Board with its 1772 Disc Controller, has been adapted to allow the use of Acorn ADFS as well. It also has all the commands of the Acorn's 1772 DFS, plus many more added features.

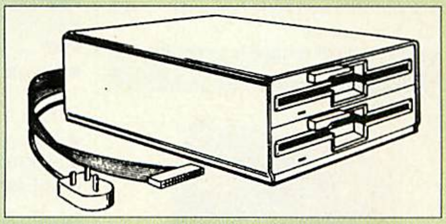
- Complete Kit — Special Price **£44**
- DDFS Manual — (No VAT) **£6.95**

## Quality Disc Drives from Watford

*All our Disc Drives are Double Sided and will operate in both Single and Double Density modes. All 5.25" Disc Drives are 40/80 track switchable. For ease of use, the switches are front mounted. Follow the trend with a Watford plinth.* *(Turn to the 6th page of our advert for the Plinths).*
*P.S. All our 5.25" Disc Drives with PSU are compatible with the Compact Micro. All you require is our special Compact Disc Drive cables designed by us.*

**"Test Bureau Approved for Use in Education"**





**Our Disc Drives conform to BS415**

| Type | Description | |
|---|---|---|
| | **Disc Drive without PSU** | |
| • **CLS400S:** | Single, 40/80 track 400K Double sided Drive | **£75** |
| • **CLD800S:** | Twin, 40/80 track, 800K Double sided Drives | **£138** |
| | **Disc Drive with PSU** | |
| • **CS400S:** | Single, 40/80 track, 400K Double sided Drive | **£85** |
| • **CD800S:** | Twin, 40/80 track, 800K Double sided Drives | **£149** |

**Credit Card Hotline: 0582 74 55 55**

**Continued→ → → → → → → → →**

## Microvitec Monitors

- **1431** – Standard Resolution #£175
- **1451** – Medium Resolution #£215
- **Cub3000** Medium Res for A3000 #£195
- Dust Cover for Microvitecs £5.50
- **Touchtec 501 Touch Screen** £239
- **Touchtec 3000** (For RiscOs 2 only) £POA

# 3 years parts & labour warranty

## Multiscan Monitors

| | | | |
|---|---|---|---|
| Eizo T240i | £483 | Pan TX1713MAB | £616 |
| Eizo F340i-W | £625 | Phil 4CM4270 | £289 |
| Eizo F550i-W | £899 | Phil 7CM3279 | £249 |
| Eizo T560iT | £1345 | Phil 7CM5279 | £269 |
| Eizo F560i-W | £1195 | Taxan 787 | £229 |
| Eizo T660i-T20" | £1899 | Taxan 787LR | £239 |
| NEC 2A-N | £274 | Taxan 789LR | £289 |
| NEC 3FG | £360 | Taxan 795-PC | £465 |
| NEC 3FGe | £352 | Taxan 875+ LR | £737 |
| NEC 4FGe | £479 | Taxan 1075-20" | £1189 |
| NEC 5FG | £899 | Taxan1150 | £1699 |
| NEC 5FGe | £789 | Taxan | |
| NEC 6FG | £1599 | 1095LR-20" | £1699 |
| Panasonic C1381 | £199 | | |

Panasonic monitors carry 2 years on-site maintenance warranty

## Aries AlphaScan Monitor

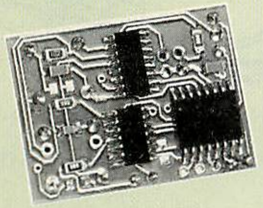
Its multiscan circuitry provides automatic adjustment for frequencies between 31 and 56KHz horizontal, and 43 and 70Hz vertical. Its 0.28mm dot pitch high resolution tube provides super sharp text graphics, while a high speed (70/72Hz) refresh rate provides a flicker-free display easing the eye strain. The VIDC Adaptor supplied with the monitor allows high resolution operation in all screen modes. **£299**

- Aries Alphascan 17" Plus £585

## Philips Monitors

- **BM7502** 12" Hi-res Green £88
- **CM8833ii** 14" med. Res Colour. Ideal for BBC B; Master & Archimedes £192
- Dust Cover for Philips Monitors £6
- Spare Monitor Leads (various) £7

## VIDC Enhancer



Our two unique VIDC add-on boards for the Archimedes cater for all VGA and Multiscan monitors and screen modes. The multimode software supplied, provides all the new modes for the selected monitor type, including the now standard Computer Concepts modes. With VGA monitor, you are no longer restricted to a few modes. A Desk Top application supplied on disc, allows new modes to be designed and existing modes to be modified for particular monitors.

**Super VGA VIDC Card:** Its unique design allows the horizontal and vertical sync to be buffered and have the polarity changed under software control **£35**

**MultiVideo VIDC Card:** As above but for MultiScan monitors only. **£19**

## Printer Leads

- BBC Centronics 4' £5; 6' £6
- Archi Parallel 2m £5; 5m £9; 10m £13
- PC Parallel 2m £5; 5m £9; 10m £13
- 25 pin D Male/Male 2m £5; 5m £10
- Centronics Double Ended 4' £5; 6' £6; 5m £10; 10m £14
- RS232 Leads Various £POA

## Integrex Ink Jet Printers

- Paper Roll for Integrex 132 £6.50
- BBC Screen Dump Software £10
- Colour Cartridge £23
- Black Cartridge £14
- 100 A4 OHP transparencies £55
- Colour Jet 2000 £599
- Betajet Ink Jet Printer £185
- Betajet Cut Sheet Feeder £43
- Integrex Colourjet Series 2 £335
- Auto Sheet Feeder for Series 2 £45

## Star Printers

| | Printer | CSF | Ribbon |
|---|---|---|---|
| LC15 | £185 | £135 | £5 |
| LC20 | £102 | £60 | £4 |
| LC100C | £119 | £65 | £9 |
| LC24-15 | £242 | £135 | £5 |
| LC24-100 | £142 | £69 | £5 |
| LC24-20 Mk2 | £170 | £65 | £5 |
| LC24-200C | £209 | £65 | £12 |
| LC200 C | £151 | £65 | £12 |
| Star Jet SJ48 | £169 | £43 | £16 |
| XB24-200C | £322# | £80 | £12 |
| XB24-250C | £389# | £139 | £12 |
| ZA-200C | £258# | £89 | £12 |
| ZA-250C | £324# | £139 | £12 |

# Includes 12 months on-site warranty

- Black Ribbons for Colour Printers £5
- Serial 8K I'face LC10/15/24/200 £52
- 32K Buffer LC/XB24-10; 15; 200 £52
- Star/Archi Colour Printer Driver £15

## NEC Printers

| | Printer | CSF | Ribbon |
|---|---|---|---|
| P22Q | £190 | £59 | £6 |
| P32 | £255 | £59 | £6 |
| P62 | £335 | £89 | £8 |
| P72 | £395 | £115 | £8 |
| P90 | £577 | £115 | £8 |

- Jetmate J400 £169; • Jetmate J800 £249
- Black Ribbons P20; P32 £6
- Ribbons P60/70/P90 Black £8; Colr £14
- P60/70 Colour Option Kit £59
- CSF for P20 £59; P60 £89; P70 £89

## Panasonic Printers

| | Printer | CSF | Ribbon |
|---|---|---|---|
| KX-P1123 | £129 | £59 | £6 |
| KX-P1170 | £98 | £59 | £6 |
| KX-P1624 | £267 | £126 | £8 |
| KX-P1654 | £334# | £126 | £8 |
| KX-P1695 | £270 | £126 | £8 |
| KX-P2123M | £148 | £79 | £8 |
| KX-P2124 | £220 | £89 | £8 |
| KX-P2180M | £128 | £79 | £8 |
| KX-P2624 | £272# | £126 | £8 |
| KX-P2023 | | | £POA |

**FREE – Printer lead with every Panasonic printer listed above**

# Includes 12 months on-site warranty

- Dustcover for 80 column printers £6
- Serial Interface for above Printers £46
- Black Ribbons for P1081, 1180, 1124 £6
- Brown, Blue or Red Ribbons for KX-P1081/1592/1595/1695 £9 each
- 32K Buffer for above Printers £16

Colour Kit for KX-P2180; KX-P2123 and KX-P2124 £37

## Laser Printers

All Laser printers (excluding HP Lasers) include 12 Months On-Site maintenance

| | | |
|---|---|---|
| Brother HL4-PS Postscript | 4ppm | £969 |
| Brother HL6 – NEW – | 6ppm | £449 |
| Brother HL10-PS | 10ppm | £1285 |
| Brother HL10-DV | 10ppm | £1149 |
| Brother HL10-DPS | 10ppm | £1439 |
| Canon LBP4 LITE | 4ppm | £535 |
| Canon LBP4+ 1.5M RAM | 4ppm | £644 |
| Canon LBP-8 Plus IIIR | 8ppm | £1435 |
| Canon LBP-8 IV 600DPI | 8ppm | £975 |
| Epson EPL-4300 | 4ppm | £520 |
| Epson EPL-5000 | 6ppm | £459 |
| Epson EPL-5200 – NEW – | 6ppm | £544 |
| Epson EPL-7500 PS | 6ppm | £1139 |
| Epson EPL8100 | 10ppm | £920 |
| Fujitsu VM600 | 5ppm | £569 |
| Fujitsu VM600E | 6ppm | £709 |
| HP Laserjet 4 ML | 4ppm | £POA |
| HP Laserjet 4 | 8ppm | £1065 |
| HP Laserjet 4L – NEW – | 4ppm | £475 |
| HP Laserjet 4M PS | 8ppm | £1445 |
| HP Laserjet 4si | 16ppm | £2225 |
| HP Laserjet 4Si MX 1200 DPI | 16ppm | £2399 |
| NEC Silentwriter S62P PS | 6ppm | £990 |
| NEC Silentwriter S102 | 6ppm | £980 |
| NEC Silentwriter2 290 | 8ppm | £1149 |
| NEC Silentwriter 290P PS | 8ppm | £1469 |
| OKI OL400E | 4ppm | £449 |
| OKI OL410 | | £589 |
| Panasonic KX-P4410 | 5ppm* | £459 |
| Panasonic KX-P4430 | 5ppm* | £592 |
| Panasonic KX-P4451 DB | 11ppm* | £895 |
| Panasonic KX-P4455 PS | 11ppm* | £1279 |
| Star LP-4 Post Script | 4ppm | £774 |
| Star LS-5 | 5ppm | £499 |
| Star LS-5 EX (RISC Based) | 5ppm | £625 |
| Star LS-5 TT True Type+Mac | 5ppm | £775 |
| Star LP-8 III postscript | 8ppm | £1130 |

*2 years on-site warranty

| | |
|---|---|
| HP Laserjet 4L 3 years on-site | £100 |
| HP Laserjet 4si 3 years on-site | £505 |
| HP Laserjet 4/4M 3 years on-site | £170 |

### Laser Toners

| | | | |
|---|---|---|---|
| Canon 2, 3 & 4 | £52 | KXP4420/50/55 | £20 |
| Canon LBP8-IV | £75 | KX-P4410/30 | £29 |
| Canon 8/Star LP8 | £59 | NEC SWriter | £84 |
| Epson GQ | £12 | HPII/D, III/D | £60 |
| EPL 40/41/4300 | £55 | HP IIP, IIIP | £54 |
| EPL 71/7500 | £117 | HP4/4M | £72 |
| EPL 8100 | £117 | HP Laserjet 4L | £65 |
| Qume Crystal(3) | £84 | OKI OL400/800 | £21 |
| Star LP4 | £52 | OKI OL400e | £17 |
| Star LS5 | £69 | VM800 8K pages | £99 |

### Laser RAM Upgrades

| Type | 1M | 2M | 4M | |
|---|---|---|---|---|
| IIP; IIIP | £49 | £80 | £132 | |
| II & IID | £60 | £96 | £142 | |
| LJ4/4M | £– | £75 | £175 | 8M/£279 |
| EPL4100 | – | £120 | – | 512K/£52 |
| KX4420/50i | £59 | £89 | £149 | |
| NEC S62/S102 | £99 | £180 | – | |
| Star LBP | £139 | £275 | – | |
| Laserjet 4L | £75 | – | – | |

### Jetpage Postscript Cartridge

- HP IIP/IIIP £225 • IID & III £227

### Various Add-Ons

- Laserjet Appletalk Interface £135
- HP Adobe Postscript+ Cartridge £359
- Pacific Page Postscript £259
- HP Premier Font Collection £28
- Laserjet Various Font C'tridges from £45
- HP Postscript Module for LJ4 £270
- Laserjet 4 Powered envelope feeder £199
- Jetdirect Ethernet Card for Laserjet IIIsi/4/4Si £359
- 500 Sheet paper cassette (3rd Bin) £205
- HPIIP/IIIP Lower Cassette Tray £115
- Canon LBP-4 Lower Cassette Tray £96
- KX-P4420 Ozone Filter £8

## Citizen Printers

| | | | |
|---|---|---|---|
| 120D+ | £94 | Swift 200 | £178 |
| PN-48 | £179 | Swift 240 | £200 |
| Swift 90 | £132 | Swift 240C | £212 |
| Swift 90C | £198 | | |

# 2 years parts and labour warranty on all above Citizen Printers.

- Swift 24 Ribbons: Black £4 Colour £13
- Cut Sheet Feeder for 80 col. printers £75
- Citizen 120D Ribbons £3.50
- Archi Colour Printer Driver £15

## Hewlett-Packard Printers

| | | | |
|---|---|---|---|
| DJ500 colour | £339 | Desk Jet 1200C | £1045 |
| DJ 550 Colour | £499 | DeskJet 1200C PS | £1479 |
| DJ Portable | £185 | | |
| Deskwriter | £299 | Deskwriter 550C | £459 |
| Deskwriter 500C | £349 | PaintJet XL300+ | £1675 |
| Quiet Jet plus | £299 | PaintJet XL300PS | £2619 |
| Desk Jet 510 | £242 | | |

+ Includes 12 months on-site warranty

3 years on-site maintenance available as follows:

DeskJet & DeskWriter mono £55

DeskJet & DeskWriter colour £65

- Paintjet Cartridge Black £15; Colour £23
- DJ Portable CSF £49; Carrying Case £49

**Special Offer**

When you purchase any Hewlett Packard printer from us, you qualify for the following software offers:

- Adobe Type Manager v2 £45
- Designworks Software pack at £39
- Lotus Organiser Software at £39

**Hi-quality InkJet Paper A4 90gsm 500 sheets £12**

### Desk Jet 500 Accessories

- Ink Cartridges Black £16; Colour £23
- High Capacity Ink Cartridges Black £21
- Ink Refill Double Pack (JetFill) £10
- Ink Refill High Capacity (JetFill) £16
- Deskjet Turbo Driver £45 (only £39 when purchased with printer)
- Archi – DJ550 Colour Printer Driver £14
- Epson FX Emulation Cart.(500 mono) £45
- IBM Proprinter Emulation Cartridge £59
- Wordperfect Cartridge £89
- DJ 500 Dust Covers £6
- 636G 50 x Transparencies A4 £40
- 636J 50 x Glossy Paper A4 (also XL) £40
- 630Z 50 x Cut Sheet Paper A4 £15

**Plug In Font Cartridges for DJ 500**

22706B - Prestige, Elite, Line Draw £55

22706C - Letter Gothic & HP Line Draw £56

22707P - Proprint Emulation Cartridges £57

**HP Paintjet/XL Accessories**

- 630P 200 Z-Fold paper 8.5 x 11 £14
- 630Q 50 Transparencies 8.5 x 11 £39
- 630S 50 Transparencies A4 £40
- 630Y 200 Cut Sheets 8.5 x 11 £14
- 631Y 200 Cut Sheets A4 £18

## Fujitsu Printers

- B-100 InkJet – HP Deskjet compatible 300dpi, whisper-quiet & 6 fonts #£179
- B-200 InkJet – HP Desk Jet compatible 300dpi. Built in Cut Sheet Feeder. Optional 2nd Bin/Tractor available #£279
- DL-1150 Dot Matrix – 24 pin, 110 column Colour optional £239
- DL-1150colour Dot Matrix – 24 pin, 110 column With colour option £269
- DL1250 £329; • DL4600 £799
- DL3600 £439; • DL5800 £999
- Joywriter £269; • DL1250 colr £369
- B-100 Cut Sheet Feeder £49
- B-200 2nd Bin Sheet Feeder £89
- B-200 Tractor Unit £69
- B-100/200 Ink Cartridges £14
- DL-1100 Colour Upgrade £39
- DL-1100 Ribbons Black £5 Colour £11
- B100/200 Jetfills Twin Pack £9

## Epson Printers

| | Printer | CSF | Ribbon |
|---|---|---|---|
| FX870 | £268 | £47 | £4 |
| FX1170 | £335 | £69 | £6 |
| LQ100 | £147 | £– | £4 |
| LQ570+ | £201 | £47 | £4 |
| LQ870 | £355 | £47 | £6 |
| LQ1060 | £585 | £155 | £6 |
| LQ1070 | £310 | £69 | £6 |
| LQ1170 | £434 | £69 | £6 |
| LQ2550 | £673 | £360 | £6 |
| LX100 | £114 | £– | £4 |
| LX400 | £92 | £69 | £4 |
| LX850+ | £134 | £69 | £4 |
| LX1050 | £203 | £125 | £6 |
| SQ870 | £409 | £170 | £23 |
| SQ1170 | £555 | £155 | £23 |
| SQ2550 | £669 | £– | £23 |
| Stylus 800 | £240 | £– | £10 |

**Epson RS232 Interface**

Standard **£28;** +8K Buffer £75

- LQ100 Tractor Feed £29
- FX850/LQ800/850 Tractor Feed £69
- FX/LQ1050 Tractor Feed £85
- LQ2500/2550 Tractor Feed £90
- Dustcovers for 80 col printers £6
- Stylus 800 Transparencies (50) £35

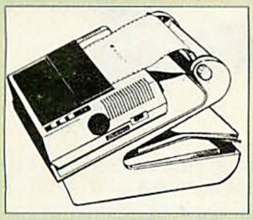
## Canon Bubblejet Printers

| | Printer | CSF | 2nd Bin | Ink Cart |
|---|---|---|---|---|
| BJ10EX | £156 | £43 | – | £16 |
| BJ10SX | £165 | £43 | – | £16 |
| BJ200 | £265 | – | – | £16 |
| BJ230 | £290 | – | – | £16 |
| BJ300* | £329 | £88 | £88 | £12 |
| BJ330* | £369 | £110 | £79 | £12 |
| BJC800C | £1289 | – | – | £16 |

- BJ10E/10EX/10SX/200/230 Jumbo Ink Refill pack (Jetfill Twin Pack) £12
- Optional Battery pack for BJ10EX/SX £33

* includes 12 months on site warranty

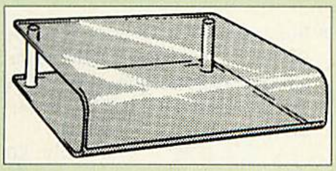
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| LQ400/500/550/800/850 | £5.50 | £6.00 |
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- 1,000 Sheets 15" x 11" Fanfold £9
- 2,000 Sheets 15" x 11" Fanfold £16
- 1,000 Sheets true A4 Fanfold 70gms £11
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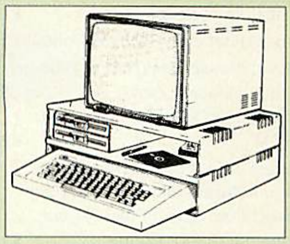
## Beeb PC (BASIC)

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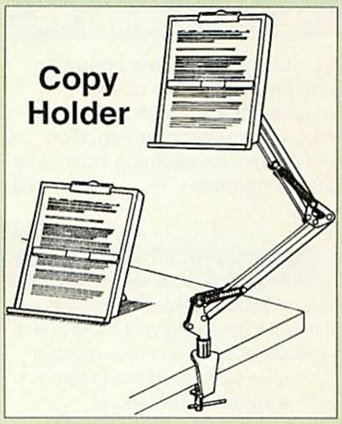
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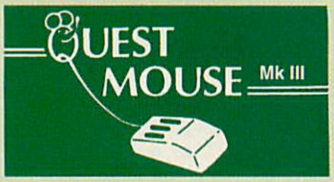
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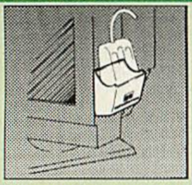
## Mk III AMX MOUSE

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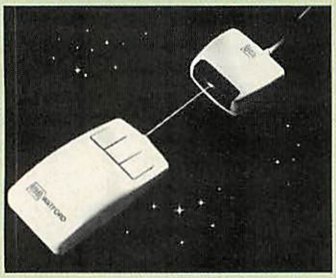
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Treat your mouse to a cosy Mouse House. This handy little gadget solves the problem of where to store your mouse when it is having a rest. Made of sturdy plastic, the WE Mouse House attaches to the side of your computer, monitor, disc drive etc.

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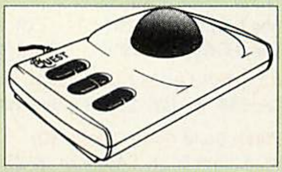
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(Wapping Editor only works with Master Compact if a Mertec Expansion box is fitted)

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Supplied complete with instructions. **£12**

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This new addition to our Wapping range of DTP software provides you with additional 23 fonts for the Wapping Editor DTP pack. (80 track discs only). **£13**

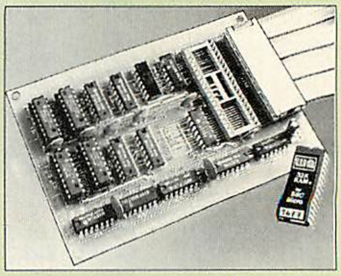
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The 216mm scanning width can cope with both desktop scanning of single sheets, photographs, diagrams, etc., with its fast ten page automatic document feeder, but it can also detach from the feeder to become a convenient hand-held full page scanner for larger documents or pictures. Scanned image control can be freely adjusted in increments of 10 dots per inch from 100 up to 400 dpi resolution with 64 levels of grey scaling. A built in shading controller and manual brightness control achieve optimum image clarity.
Unlike some scanners, which use a red light source, the Watford scanner uses a yellow/green source which vastly improves the light/dark contrast, thus eliminating the effect where any red-based colours are faded down to white and so do not show up in the scanned image.

| | |
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A MUST FOR WORD PROCESSING

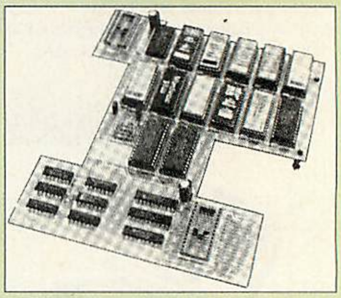
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- "VIEW" Wordprocessor users can now type in letters in 80 columns and have up to 28K bytes free – 5 times as much as normal.

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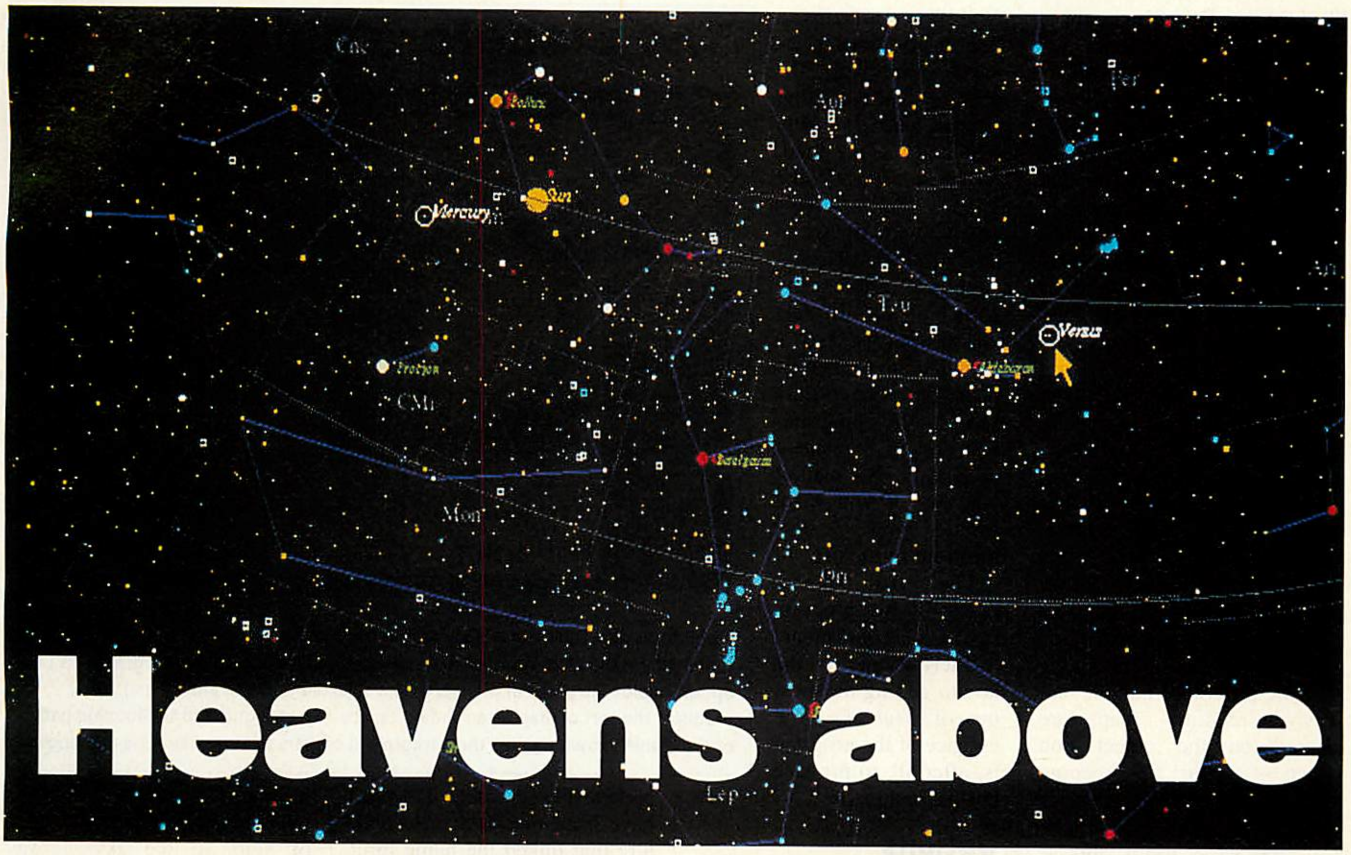
**Price: Only £32**
Battery Backup fitted **£35**
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**Watford POWER DUCK £8**




# Heavens above

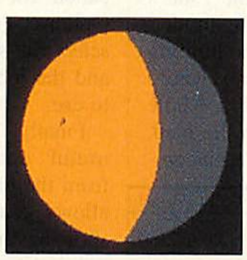
**Star-gazing isn't just a national pastime it is an integral part of the National Curriculum. Fin Fahey looks at a pre-release of Clares' NightSky**

Astronomy is a big science; not only because of the billions in research money invested in it or because it is now an integral part of the National Curriculum – it is also one of the great national hobbies, and is right up there with angling and gardening.

All the more surprising, then, that there has not been a really versatile star-mapping program available for the Arc: something that would suit all the different astronomy 'users', from education to comet-seeking, variable star studies or casual interest. All such programs to date, many of which are very good, are nevertheless limited in range.

Clares is now attempting to fill the gap with *NightSky*, the first all-purpose astrographic program I've seen. You can tell that this one is loaded with features; the pre-release version I reviewed came with a 116-page manual (also pre-release) and, if you want to get the best out of the program, careful study of this well-written document pays dividends.

The program itself comes on two discs. One contains the main application, the other, the resource disc, contains example files for you to examine plus a really sensibly-sized star catalogue – no less than 26,200 objects – that will not fit on the other disc. All these files can be very readily transferred to your hard disc. The inclusion of this catalogue alone means that *NightSky* will be the first program to be of serious interest to telescopic observers; it means that all stars down to magnitude 7.33 are visible, in other words all the stars visible with small binoculars.



Once loaded onto the iconbar, you get some immediate action out of the program by clicking Select. This is, initially, bewildering; you are faced with a four-option menu. Ignoring the details and clicking on Here: Now – which means night sky as indicated by the system clock and seen from Northwick in the UK – the program gives a circular star-field using the default (middle-sized) database.

Stars are unfussy blobs shown in a variety of colours corresponding to their spectral types, but a beginner could find this first view confusing, since the names of prominent objects (planets and bright stars) and abbreviated names for the constellations are in tiny (six point) letters. Don't be intimidated by this; it can be altered and we should be thankful there are names on the map at all. As far as I know this is the first commercial program with maps with proper labelling.

The most important thing to learn next is how to move around the map. All the buttons have functions here. Clicking Select will give you a box showing information on the object nearest the pointer, while Adjust recentres the map on the pointer position. Menu gives you access to a wide range of program functions.

An easy zoom facility is included; if you hold the Select button a little longer, a rectangle appears when you release the button. This can be expanded or shrunk using Select and Adjust, while Menu then performs the Zoom. This is pushing the limits of Risc OS compliance, but in all fairness, once you get used to it, it is hard to see how a simpler way of exploring the map could be arrived at.

The Menu button gives you fast access to a range of program functions. The current map can be saved or printed. *NightSky* doesn't support printing itself, but the Print icon is simply dragged over to *Draw* or *Paint* and the map printed from there. The result looks very professional indeed.

Faced with initial confusion, the Find option is very handy. This will tell you where a given planet or star is and show them on the map along with information. I particularly

liked the star finder box, where most of the brighter stars can be selected by clicking either on the appropriate Greek letter or constellation abbreviation. It's good to see a program using real Greek letters instead of English translations, too.

Realtime is another versatile option. This will automatically update the map every 10, 30 or 60 seconds to reflect the changing sky. The steps you choose can be anywhere from a minute to 10,000 years. The latter allows you to observe how the axis of the Earth precesses, how the stars move through space and the shapes of the constellations change. Pressing CTRL-R, reverses time and lets you watch things backwards. With all this going on, Lock is a useful tool. This takes you to the Find menu, with the difference that all successive 'realtime' maps are centred on the object you select – useful for keeping track of planets.

Zoom is essential. If you've used the easy zoom, this is where you can zoom back out, simply by dragging a bar across. You can also quickly change the direction of view using this item.

Label means you are able to type a label of your own design on a map; this is very useful if you want to print it out and file it for later use. Map Title lets you change the information on the bar above the program and New Map gives you the same menu as Select on the iconbar.

In spite of all the versatility I've detailed above, New Map is where you discover the true range of the program. This is where you can tell the computer your position and time. Instead of simply asking you to input latitude and longitude, *NightSky* maintains a file of locations scattered all over the planet. The existing choices here are a little odd, and include Bled, Slovenia and Wake Island (if there's anyone with an Arc in any of these places I apologise for my parochialism). In fact the whole list has a strong southern hemisphere bias, due to John Banks, the programmer, being a resident of Brunei. No matter: you can, if you wish, add your own locations to the list.

The real power house of the program is the Options menu. Mastering this is the key to getting the most out of *NightSky*. The essence of the program is, after all, to produce customised maps.

## Options

Options lets you turn on and off a wide range of features, many of which I haven't seen on a starmap program before. My favourite one is the constellation boundaries, but you can select grids for different map co-ordinate systems. These can be selected as full grid or an equator for each.

If you don't like the size of the star/planet names, this is also the place to change these. They can be displayed in a range of outline fonts or in the system font, and you can also elect to display the star's Greek letter and/or magnitude.

You can specify a limiting magnitude for names. Overdo the naming and add a whole collection of grids to the map, and you end up with an incomprehensible scramble. It would have been nice to have a feature that linked the name limit to zoom level, so as you zoom in, the more stars will get named.

Further features you can toggle are the constellation outlines and boundaries and 'deepsky' - a file of non-stellar objects, such as galaxies and nebulae, that appear on the map as square boxes.

Other important aspects of the map can also be altered, including colours of all objects; this is a particularly thorough part, where an individual colour menu can be called for almost everything. Options is also where you select the size of star database and the location file you want to use.

Finally, another couple of useful options are available from the bar menu. Precession allows you to produce a map showing the movement of the poles over a period, and Occultations – a fascinating item – compiles a file showing which celestial objects pass in front of each other over time. This takes a while to compile.

A special case of occultation is solar eclipses, and it must be noted that the program produces particularly good and accurate representations of these. In fact, accuracy is one of the keynotes throughout the program, right down to the movements (proper motions) of stars in the sky. I was unable to ascertain whether these were true (three-space) or two-co-ordinate motions which fall off in accuracy away from the present day.

## A universe of detail

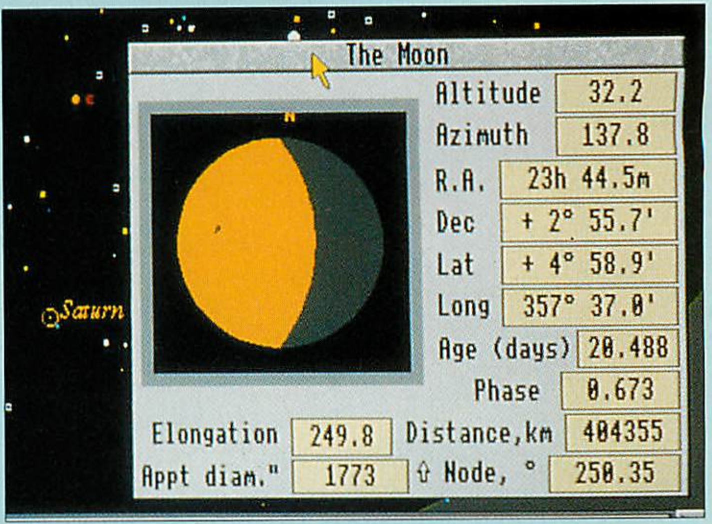
These are not features for their own sake; every observer or educationalist will have quite different requirements, and *NightSky* aims to satisfy them.

And it's fast. Even with the largest star catalogue selected, plotting time is acceptable – a few seconds – and with the smallest it's almost instant.

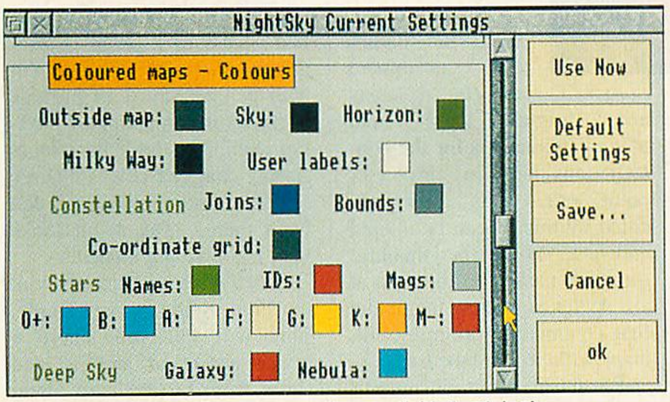
Complaints? I did feel that the program could have displayed things in a more sensible order. Star names and letters should be displayed last but in fact, if selected, constellation outlines are plotted after them, which ruins legibility.

When it's ready for release, *NightSky* will be something to look out for. With its attention to detail, it is a *tour de force*, appealing to educationalists and observers alike.

## The planetary guide




Fast information can be also obtained on the Moon and planets without having to find them on the map. Another feature that endeared me to the program was the option to plot the paths of planets over a selected time (an analemma). This produces the sort of map often shown on The Sky at Night with the looping path of the planet shown against the background of stars with regular time markings.




Just a small selection of the many options available in NightSky

## Product details

Product: NightSky
Supplier: Clares Micro Supplies
Telephone: (0606) 48511
Price: £79.95

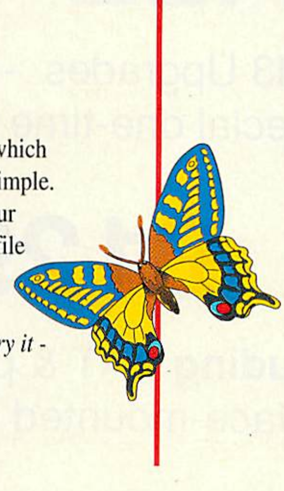
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ArtWorks

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It's a year since Acorn's portable, the A4, appeared on the scene, time enough for lots of peripherals to hit the stores. Dave Lawrence and Ian Burley look at some add-ons you could get attached to

# ON THE MOVE

It's been over a year since the announcement of Acorn's portable computer the A4, and it's taken nearly this long for any peripherals to appear. Now Acorn portable owners can at last start making their machine more useful and flexible and we thought we'd do a quick round up of some of the bits and pieces you can add to your briefcase-sized A5000.



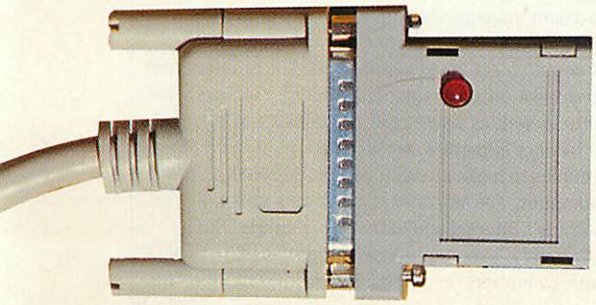

## ECONET

This Acorn board fits in the area above the top left-hand side of the keyboard; this whole panel unclips and is replaced by an identical panel carrying the Econet board. This plugs into a connector on the main circuit board via a small bundle of wires.

I found fitting the thing amazingly tricky, especially plugging the IDC connectors onto both boards. The connection is 26-way, but each 'way' is an individual wire; a ribbon cable would have been less bulky and possibly easier to install. Once in though, the whole panel clips down and is effectively invisible.

External connection is via a micro-Din (like those used by mouse and keyboard) and a suitable lead of a useful length is supplied that will plug into a normal five-pin Din Econet junction box. Strangely though, this lead plugs into the portable upside down.

Risc OS 3.1 recognises the Econet hardware and will automatically start up the desktop net filer; from here you can access fileservers, run a Level 4 file-server or whatever, in the usual way. I could find no fault in the operation of the Econet and found it to be a very useful addition to my portable, especially as a quick way of backing up important work onto my main machine.



## Product Details

**Products: A4 Econet Board (£50), A4 Carrying Case (£35)**
**Supplier: Acorn Computers Ltd**
**Tel: (0223) 254254**

**Products: Pocket Ethernet Adaptor (£199), Pocket SCSI Adaptor (£49), Hi-point Trackerball (£49.95)**
**Supplier: Atomwide Ltd**
**Tel: (0689) 838852**

**All prices are excluding VAT**

## POCKET ETHERNET ADAPTOR

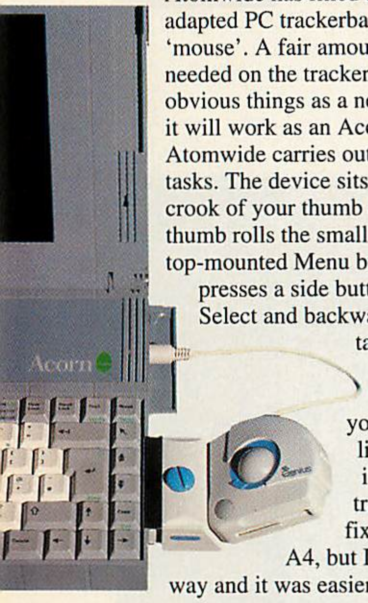
If you think Econet is old hat, perhaps the Atomwide PEA is for you. All it needs is a bi-directional parallel printer port, so it is actually suitable for any of the modern Acorn computers (A5000 and later) as well as the A4. To keep power consumption down, an external power supply is provided, of great value in a portable, where battery life is a major consideration.

Two kinds of Ethernet socket are available: 10Base2 and 10BaseT — you must specify your choice when ordering. Installation couldn't really be easier; fold down the back panel and plug in the adaptor. Once the relevant software has been set up you are free to communicate via

AUN to an AUN server or via NFS to a Unix box in exactly the same way as with an Ethernet podule. You can expect a peak transfer rate of about 200K per second.

## HI-POINT TRACKBALL

Acorn toyed with many mouse replacements while designing the portable, but couldn't find anything wholly satisfactory. The simple cursor key and QWE mouse emulation is fine if you just plan to write page after page of text, but as soon as you start to need to move windows about the desktop and so on, the old left thumb starts to get a little sore pressing FN all the time.



Atomwide has filled this niche with an adapted PC trackerball, the Hi-Point 'mouse'. A fair amount of internal work is needed on the trackerball (including such obvious things as a new connector) before it will work as an Acorn mouse, but Atomwide carries out all the necessary tasks. The device sits comfortably in the crook of your thumb and forefinger: your thumb rolls the small ball and operates the top-mounted Menu button; your finger presses a side button forward for Select and backward for Adjust. This takes a little getting used to, but I think after half an hour you'll wonder how you lived without it. A clip is supplied so the trackerball can be fixed the side of the A4, but I found this got in the way and it was easier to leave it off.

## POCKET SCSI ADAPTOR

The most obvious missing connector on the portable is for any form of external drive for back-up purposes. Enter the Atomwide PSA.

As with the PEA, the PSA requires a bi-directional parallel port. There are three varieties: SCSI only, SCSI and printer and dual SCSI and printer. The first (and the one on test here) is tiny: only the size of an *Impression* dongle.

Again, no power is taken from the A4. Instead, the necessary current is drawn from the SCSI bus itself; a telltale LED should illuminate when the adaptor is connected to a SCSI device. Software support comes in the form of an officially-licensed version of Acorn's SCSIFS and CDFS with a few extra twiddles. For example, on start up you need only run the application *BootSCSI*, which queries the bus and finds out what drives are connected, then adds the correct number of filer icons to the iconbar.

With the PSA I had I successfully connected my A4 up to the internal SCSI drives on my A5000 and as long as neither machine had cached data, I could read and write the drives concurrently. Another invaluable accessory.

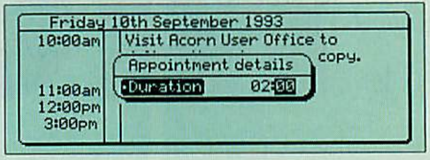
## ACORN CARRYING CASE

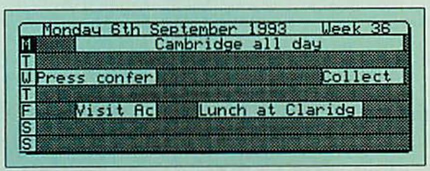
The problem with all these adaptors is you need some bloody big pockets to carry everything around in, so Acorn sells a carrying case. It can carry the A4, its power supply and lead, and a mouse (or trackerball). It even has pockets to hold about 15 discs – who could ask for more?

# Pocket book

There is a very serious computer hidden away in the tight confines of an Acorn PocketBook. There is ample evidence of this in the applications compatible with the PocketBook: most of them developed originally for its Psion Series 3 sibling. Here we look at some offerings from Widget Software, but first a mini-review of the new PocketBook personal diary and scheduler: Acorn *Schedule*.

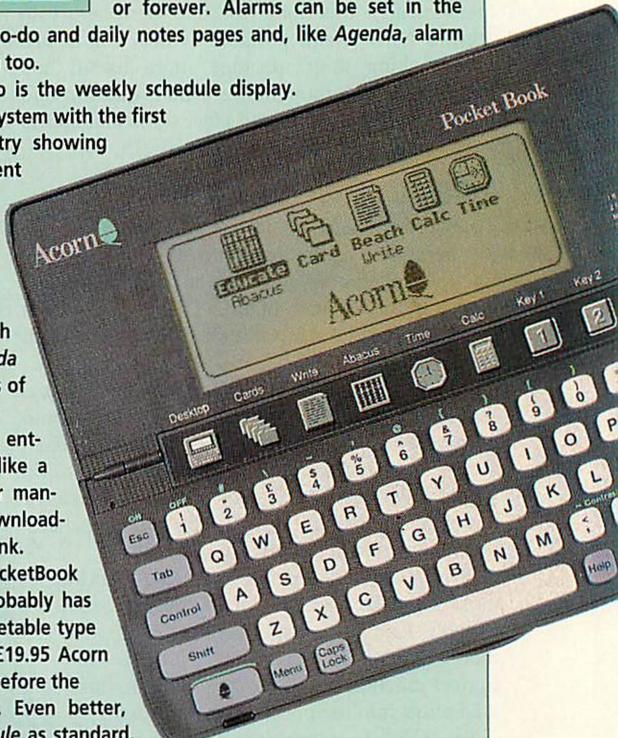
One of the most important features missing in the PocketBook, Acorn's version of the very successful Psion Series 3, has been a diary/scheduler. Now Acorn has produced its own program which is called, simply, *Schedule*. This is a variation on the theme set by the Series 3's much-praised *Agenda*. Both store daily diary entries with appointment details and durations, show monthly calendars, week-at-a glance schedules, and incorporate to-do lists.



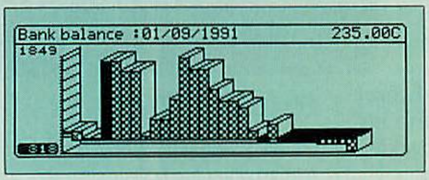

Both applications have daily notepad pages, though *Agenda* incorporates these on one screen whereas *Schedule* separates them. The notes page in *Schedule* is untitled, which could be confusing for a new user. Note entries can be repeated daily, weekly, monthly or forever. Alarms can be set in the daily diary/scheduler as well as the to-do and daily notes pages and, like *Agenda*, alarm settings show on the clock application too.

A big difference between the two is the weekly schedule display. *Schedule* uses a horizontal bar-chart system with the first few letters of the appointment entry showing through – the longer the appointment duration, the more you see. I can imagine users, like students or teachers, quickly using abbreviations to fit inside the windows, like classroom numbers or subject codes.




I liked *Schedule* very much: high praise from someone who uses *Agenda* every day. I wondered if the internals of *Schedule* were from Psion with a new front end, but Acorn tells me it was entirely developed in-house. Next, I'd like a follow-up Risc OS version for easier management of *Schedule*'s facilities, downloading updated *Schedule* files across A-Link.

Acorn *Schedule* is just what PocketBook users have been waiting for and probably has the edge over *Agenda* for school timetable type needs. At the introductory price of £19.95 Acorn *Schedule* should be snapped up fast before the price reverts to £49.95 in October. Even better, perhaps Acorn should include *Schedule* as standard, in the PocketBook's built in software, like *Agenda* in the Psion Series 3.




## Other programs

Now for some PocketBook-compatible applications from Widget. Widget is probably the best known independent software house in this market. Two of its best selling applications are *Finance Pack 3* (£59.95 + VAT) and *Series 3 Tools* (£49.95 + VAT).

*Finance Pack*, shown above, is a bank account management utility capable of looking after up to 24 accounts, 24 transaction types and 24 standing orders per data file.

You can also set up 24 different report or statement types per data file. The program can emulate your bank account down to details like auto-incrementing cheque numbers. The package can be used for ordinary accounts as well as credit card or building society ones and warnings can be set to trigger if your balance exceeds a certain level.

*Series 3 Tools* is a suite of four useful utilities to make life with your PocketBook a little simpler. *Power Check* shows battery consumption; *File Manager* is just that, a utility showing the file tree structure of your machine's internal and SSD external drives. *Task Master* is a to-do list application. Finally, *Convert* is a multi-purpose unit conversion utility. Widget Software is on (0438) 815444; Acorn Computers on (0223) 254254.

# Picture this

Whether you are designing a letterhead or producing your own magazine, clipart gives you strong visuals at the click of a mouse. Rob Miller looks at some choices

Those of you who struggled with glue, scissors and photocopiers before the advent of desktop publishing will no doubt have come across the Letraset© catalogue with its collection of transfer sheets depicting groovily-dressed people in 'everyday' poses. These pictures could be regarded as the first items of clipart.

Unless you were blessed with some artistic ability, it was the only way of illustrating newsletters or other documents. You also had to make do with whatever was on the sheet, unless you had a go at DIY surgery and tried to cut up and reassemble the bodies.

Today, thanks to the computer, clipart is readily available. It's simple to use and, most importantly, easy to edit to get the picture you want. Clipart (especially vector-based pictures) can be scaled, rotated and generally cut up to suit the task in hand. Any picture or design that can be dropped or incorporated into a page can be regarded as clipart.

There are two distinct types; bitmap (or pixel-based) and vector (or line-based). On the Archimedes, bitmap clipart will include anything made up of pixels (sprites, in other words) while vector clip art includes *Draw*, *Vector* and *Artworks* files.

On other computer formats such as the PC and Mac there are numerous other standards, but all fall into one or other of the two groups.

## What is there?

Think of the most bizarre thing possible (then double it) and there's likely to be a piece of clipart relevant to it. Everything from aardvarks to zygotes is covered in one form or another.

The way *Draw* was designed means it is relatively simple to port clipart across from both PCs and Macs.

Alien bitmap formats are also catered for by applications such as *ChangeFSI* and *Translator*. These allow a large amount of PC and Mac bitmap clipart to be transferred across to the Archimedes.

## How to get it

Because of the huge amount of clipart, the compact disc (CD-Rom) medium is often employed to store files. This offers the benefit of being able to have a complete library (up to 650Mb) on one disc. A number of clipart suppliers use CD-Rom for storage though most still use floppies because not everybody has a CD-Rom drive, and often the size of the library does not justify the transfer to CD-Rom.

Because there is so much clipart, it's impossible to cover it all in an article such as this. Having decided to concentrate on floppy-based clipart in this article. we picked eight general topics and selected what we regard as the best of each. We considered quality of clipart, and value for money: how much you get on a disc.

Some categories had lots of entries while others had only a few; dinosaurs, for example, were very popular. A full list of all the clipart supplied is provided on this month's subscriber's disc to give a clear idea of everything available.

## SIGNS AND SYMBOLS

### 1. Desktop Projects - Special Art: Signs

This collection of four discs contains virtually every sign you could imagine from warning signs to general signs dealing with safety.




Most designs are based on real signs so files could be printed and used around schools and offices. Desktop Projects *Road Signs & Symbols* discs contain a useful selection of symbols.

### 2. Matt Black - Image Club Disc 23: Borders & Ornaments

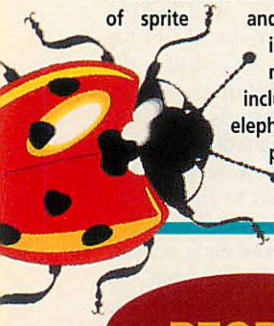
*Borders & Ornaments* is definitely more of a decorative pack and includes all manner of squiggles and patterns. The quality of the files is excellent and files on the discs are ideal for giving your work an established look. A lot of the designs are based on old woodcuts and the contrasting black-and-white effect is reproduced well.



## WILDLIFE

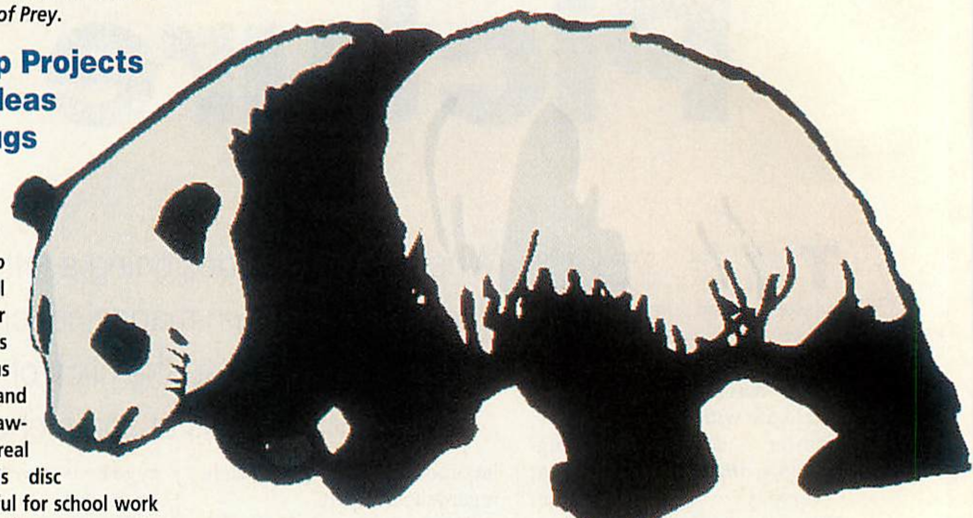
### 1. DEC_dATA – Animals of the World

DEC_dATA carries a large range of clipart based on nature and wildlife in general. *Animals of the World* contains a mixed selection of sprite and *Draw* files, illustrating many animals including lions, elephants and pandas. Other discs in the natural history section include *Ponds* and *Birds of Prey*.



### 2. Desktop Projects – Bright Ideas Disc 5: Bugs to Slugs

If creepy crawlies are your thing, *Bugs to Slugs* is an ideal choice with over 50 *Draw* files covering various beetles, flies and bugs. All the drawings depict real insects, so this disc could prove useful for school work or actual case studies.



## PEOPLE

### 1. Matt Black – Image Club Disc 18: Celebrity Caricatures

Caricatures make ideal territory for clipart and this collection of four discs contains 100 of them.

All files are in *Draw* format and have been humorously created by a number of artists. Because the files have been converted from the PC, many of the people depicted here are Americans although most of them should still be familiar and recognisable to a British reader.

### 2. Sherston - Split an Image

Another collection of caricatures, this time drawn specifically for the Archimedes and therefore mostly native to this country.

Like other Sherston clipart collections, *Split an Image* includes various bits which you can stick together to make your own clipart. All of the clipart is in *Draw* format.



## HISTORY




### 1. Anglia TV – Most of its clip art collection.

The majority of Anglia TV's clip art collection has a historical theme so it's difficult to pick out one particular set. Topics range from dinosaurs to the Second World War. All the files are in *Draw* format and most include a few lines of text describing the illustration.

### 2. DEC_dATA – Extinct Animals

Dinosaurs had to make an entry and DEC_dATA's collection *Extinct Animals* is one of the best. *Draw* files of dinosaurs and skeletons are included.

A special size comparison chart is included (as a *Draw* file) that shows you the size of a man in scale compared to the beasts.



## TRANSPORT

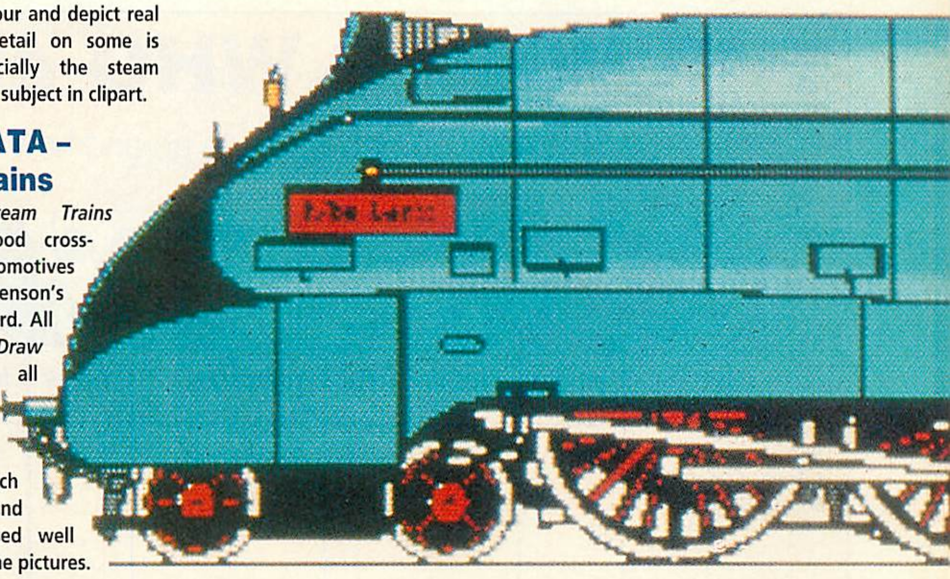
### 1. Desktop Projects – Bright Ideas disc 2: Transport



Cars, boats and planes all feature in the Desktop Projects *Transport* disc. All files are in *Draw* format, most are in colour and depict real vehicles. The detail on some is excellent, especially the steam trains, a popular subject in clipart.

### 2. DEC_dATA – Steam Trains

DEC_dATA's *Steam Trains* disc has a good cross-section of locomotives from Stephenson's Rocket to Mallard. All pictures are in *Draw* format and all include a few lines of facts and figures regarding each train. Colour and shading are used well throughout all the pictures.

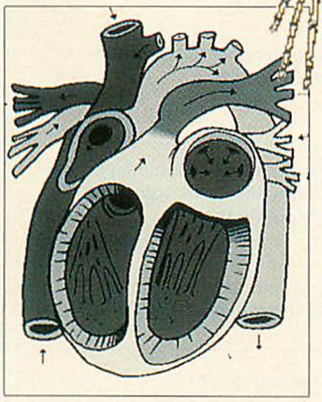


## SCIENCE

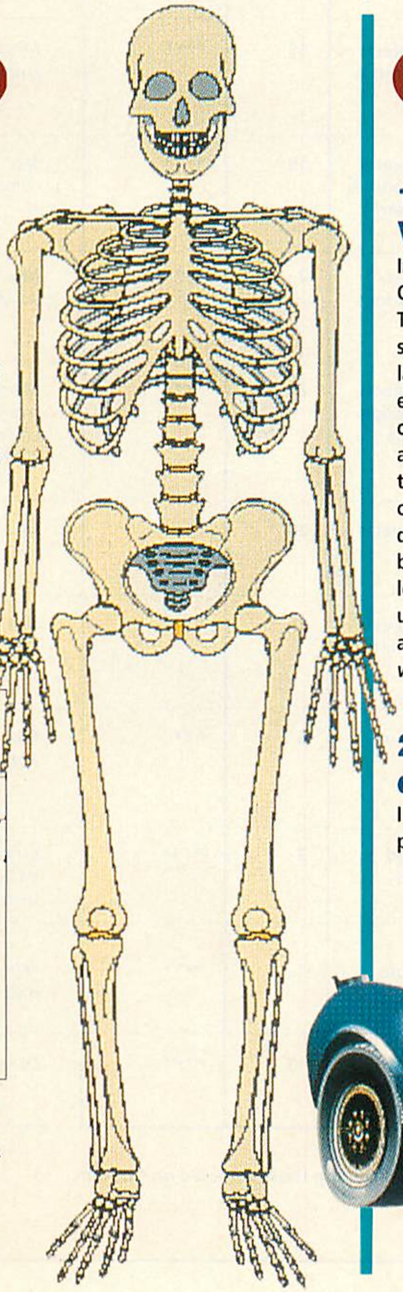
### 1. SSERC – Any of its clipart library

The SSERC library of clipart deals exclusively with science and technology and contains a vast resource of material suitable for science applications in schools and colleges. Pictures consist of both sprite and *Draw* files and cover subjects such as chemistry, physics and biology, as well as general technology.

### 2. Matt Black – Image Club Disc 24: Science & Nature



Everything from anatomy to zoology in this collection of 200 *Draw* files. Most would be ideal for illustrating scientific work. The collection is another import from America, so expect lots of pictures of the Space Shuttle.



## ODDS AND ENDS

### 1. Matt Black – Vanguard Pack 1

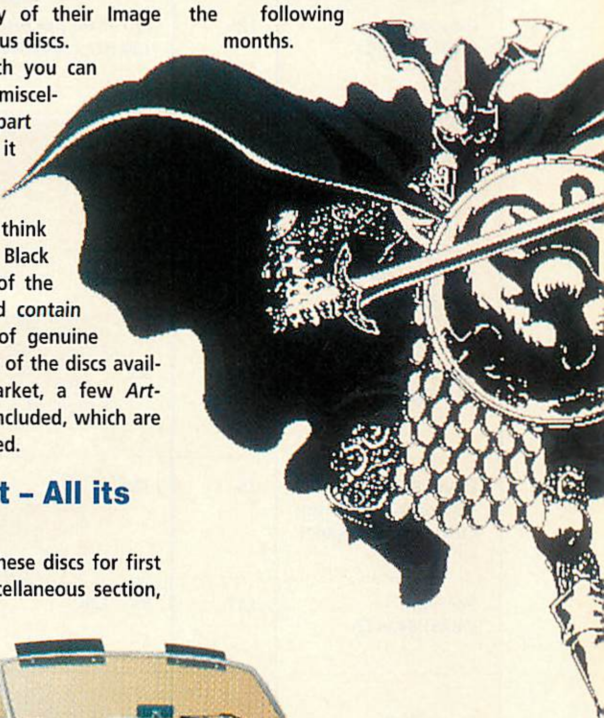
In addition, any of their Image Club miscellaneous discs. There's not much you can say about miscellaneous clipart except that it covers just about everything you could think of. The Matt Black discs are some of the best around and contain lots of images of genuine use. Unlike most of the discs available on the market, a few *Artworks* files are included, which are very good indeed.

### 2. ABC Art – All its discs

I almost chose these discs for first place is the miscellaneous section, but didn't as they contain only *Artworks* files.

The quality of the pictures here is quite superb and the artist has obviously spent a great deal of time on them.

These two discs represent 'A' and 'B' in the collection and 'C' to 'Z' should become available over the following months.





# THE WHO'S WHO of CLIP ART

What you get, where to go and how much it costs



| COMPANY | PRICE | PICS PER TITLE | TOPICS(2) | TITLES | RATING | DESCRIPTION |
|---|---|---|---|---|---|---|
| ABC Art<br>Tideways, South Rd,<br>Brean, Somerset,<br>TA8 2SE | £8 | 15 | Miscellaneous | 2 | ***** | Miscellaneous ArtWorks files. Each disc has a letter theme |
| Anglia TV<br>(0603) 615151 | £12 | 30 | Mostly history | 18 | *** | Mostly monochrome Draw files |
| DEC_dATA<br>(0392) 221702 | £6-£20 | 25 | Various subjects including Nature & History | 55 | **** | Mix of sprite and Draw files covering many themes |
| DeskTop Projects<br>061-474 0778 | £8-£20 | 50 | Various subjects including Sport & Entertainment | 13 | **** | Mix of monchrome and colour Draw files |
| Honormead<br>(0332) 510951 | £25 | Aprox 50 per disc 300 per collection | Two libraries covering various topics | 2 | *** | Mix of sprite and Draw files suitable for younger age group |
| Matt Black<br>(0733) 315439 | £30 | 100 | Various subjects including People and Business | 24 | ***** | Monochrome Draw files converted from Aldus EPS format. Vanguard Library consists of Draw and Artworks files drawn on the Arc |
| MicroStudio<br>(0353) 720433 | £20-£30 | 70 – 350 | Various subjects | 20 | *** | Mix of sprite and Draw files |
| NW Semerc<br>061-627 4469 | £12 | 50 | Various subjects suitable for class work | 15 | *** | Mix of mostly colour sprite and Draw files. |
| David Pilling<br>PO Box 22, Thornton<br>Cleveleys, Blackpool | £6 | 300 | Miscellaneous | 6 | *** | Mix of monochrome sprite and Draw files |
| Sherston<br>(0666) 840433 | £17 | 50 – 120 | People, Food & Christmas | 3 | **** | Colour and monochrome versions of Draw files, plus scenes to incorporate them in |
| Smart DTP<br>(0332) 842803 | £18 | 300 | Miscellaneous | 1 | **** | Mix of monochrome sprite and Draw files |
| SSERC<br>031-668 4421 | £12 | 50 | Science and Technology for schools | 15 | **** | Draw and sprite files |

SUBSCRIBERS ONLY:
A full listing of all the clipart titles available for the Risc OS machines, including those released on CD Rom, can be found on this month's subscriber's disc.

# *Pro-Pad*

For those who are into serious game action...




- Fully compatible with:
  A3000/A3010/A3020
  A300 Series
  A400 Series
  A500 Series
- Really easy to use
- Game database – stores information on high scores, cheats, etc
- Easy to set up – press button on pad press key on keyboard to set
- Set JoyPad buttons to do any other button, e.g. one button for fire, one button for bomb, one button does both!
- It's the new style in the games world

**R.R.P. £45 + VAT**

introducing the new *Joyster*

The joystick interface for those who are into game action...

- Fully compatible with:
  A3000/A3020/A4000/A5000
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  A500 Series
- Easy to use
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- Hardware and software supplied in packaging suitable for showroom presentation
- Can use one or two joysticks at any time. Suits any Atari style joystick

**R.R.P. Joyster £29 + VAT**
**R.R.P. Joystick £9.99 + VAT**

*Memory*

| | | | |
|---|---|---|---|
| 1-2 Mb | £25 | 2-4 Mb | £49 |
| 1-4 Mb | £POA | 2-4 Mb | £49 |
| 1-2 Mb | £25 | 1-4 Mb | £POA |
| 1-4 Mb | £POA | | |

from small seeds...
...grow mighty Acorns

CU ELECTRONICS

**For all A3000 & A3010 users**

**21Mb Internal HardCard £179**

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**60Mb Internal HardCard £259**

**84Mb Internal HardCard £289**

**A3010 2Mb inc 21Mb H/D £559**

**A3010 2Mb inc 60Mb H/D £649**

**A3010 2Mb inc 84Mb H/D £679**

**All prices + VAT**

CU ELECTRONICS

65A Middle Hillgate
Stockport SK1 3EH

**Tel: 061 476 0576**

**All Acorn products available**

# IN BRIEF

We take a look at the first commercial version of Warm Silence's public domain backdrop package and not-just-another-multipurpose-text-editor from Stallion

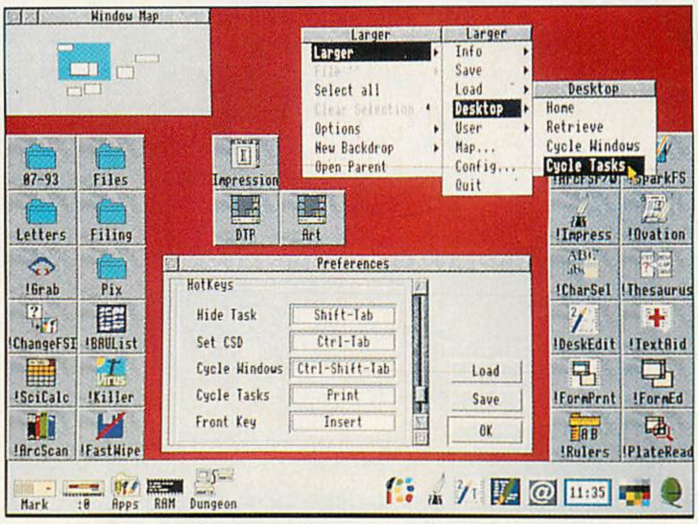
## LARGER

**Supplier: Warm Silence Software, c/o Robin Watts, St Catherine's College, Manor Road, Oxford**
**Price: £10 (includes site licence)**

I've been using *Larger* in its public domain form for as long as I can remember. Now, author Robin Watts has released it commercially.

*Larger* is the backdrop application to beat all others. Forget Acorn's Pinboard – *Larger* has far more features than any other program on the market. It's impossible to cover everything here, but...

*Larger* does everything Pinboard does, and its display is far neater. You can optionally display plinths behind icons on the backdrop for a professional look, and icons can be automatically organised (so applications and directories are forced to any side of the screen you wish). The backdrop acts like the Filer, with a similar menu structure, reducing the learning curve drastically. One excellent feature is the ability to create separate backdrops, which appear on the backdrop like iconised windows; double-clicking on a backdrop brings up a new layout, so you could have one backdrop for DTP, one for graphics and so on. You can iconise windows in the usual way, and iconise all windows from one application.



Larger in action, showing the window map and the options window

The second major feature is the one that gives the application its name: it provides a *virtual desktop*. This increases the desktop so windows can be moved off-screen. To prevent you losing windows there is a map showing where other windows are at any one moment.

Calling it a sticky backdrop program hardly does it justice. For a tenner, this is one of those applications you can't afford to miss. If this doesn't become the *de facto* backdrop application, I'll eat my shorts.

**Mark Moxon**

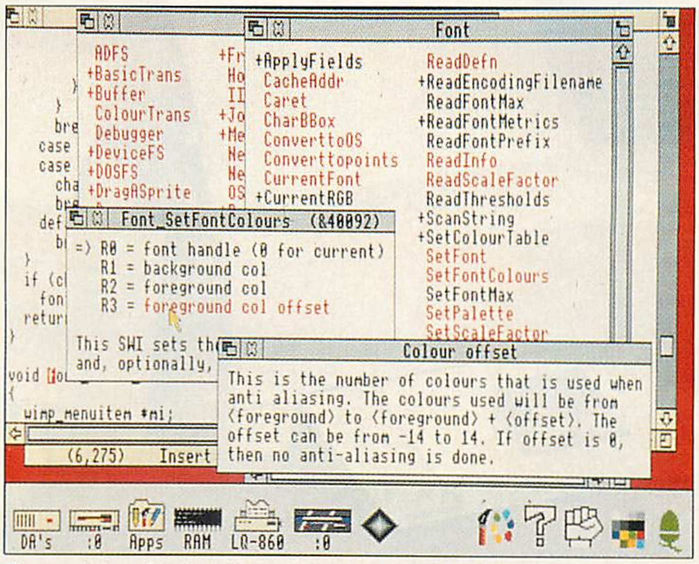
## STRONGED

**Supplier: Stallion Software**
**Tel: (0225) 339090**
**Price: £30.20; twoto three-user licence £47**

Room for another multi-purpose text editor in the Acorn market? No chance. Then I tried *StrongEd* for five minutes. And it's one of those pieces of software that makes you say: 'why didn't anyone else think of that?'

Like *DeskEdit* you have a choice of mode, depending on whether you are working in Basic, C or whatever. In Basic there are 'RUN' and 'SAVE and RUN' keys, and another to list DEF PROCs and FNs. In C there is also a key to list functions, plus others to pass your file directly to the compiler. If you're ambitious, customise modes, or create a new one.

Keyboard short-cuts feature heavily and make editing much easier (and mouse free). Simply being able to highlight a block of lines by holding down ESCAPE and using the cursor keys is a treat. Indeed, *StrongEd* seems built for people who use editors a lot. The interactive search option offers 'search-as-you-type' and remembers previous searches so you can page up and down. A major selling point is sister



The words in red in the help window can be clicked on for additional help

application *StrongHelp*, which comes free and offers help on Basic, SWI calls and hardware addresses. Any red words in a help window may be clicked on for more help. Click on *SWI* for a list of SWI groups, then on *OS*, then *SpriteOp*, then *Reason code* for a list of sprite op calls. Extra help, including C, will be sold separately.

Some other features deserve a mention. You can save the current arrangement of viewers, rather like saving the *PinBoard* and can also do a global search & replace that affects *all* loaded text files. Whenever you close a bracket the corresponding opening bracket is highlighted – a brilliant idea, particularly for C.

*StrongEd* is an excellent piece of software. I think programmers will be particularly impressed with it and it has definitely become the standard to beat.

**Dave Acton**

# QUALITY & SPEED

The BJ-200 and BJ-230 are the latest black and white printers from Canon, the market leaders in bubblejet technology.

The BJ-230 is an A3 version of the popular BJ-200. Both printers come with a built-in 80 page sheet feeder and power supply. With a print density of 360dpi the print quality of both these printers is hard to distinguish from a laser printer and better than any other competing black and white inkjet printers. A sample A4 print out is available on request so you can make the comparison. And like all inkjet printers they are whisper quiet and both easy and cheap to maintain.

Both printers are supplied with Computer Concepts' super-fast TurboDriver printer drivers - printing and returning control on average between three and ten times faster than the standard Acorn drivers or the Ace PROdrivers. The RISC OS 3 versions of the TurboDriver also support rotated text and sprite printing, multiple printer icons on the icon bar and full PostScript style control over halftone screen density, screen angle and screen type. They can also handle 24 bit CMYK colour separation and so colour prints can be obtained by using colour inks and passing the paper through four times.

RISC OS 3 Turbo DRIVERS

We are so confident about these printers that we will guarantee that this combination of TurboDriver and BJ-200 or BJ-230 is the fastest, highest quality printer available for less than a laser printer, or your money back.

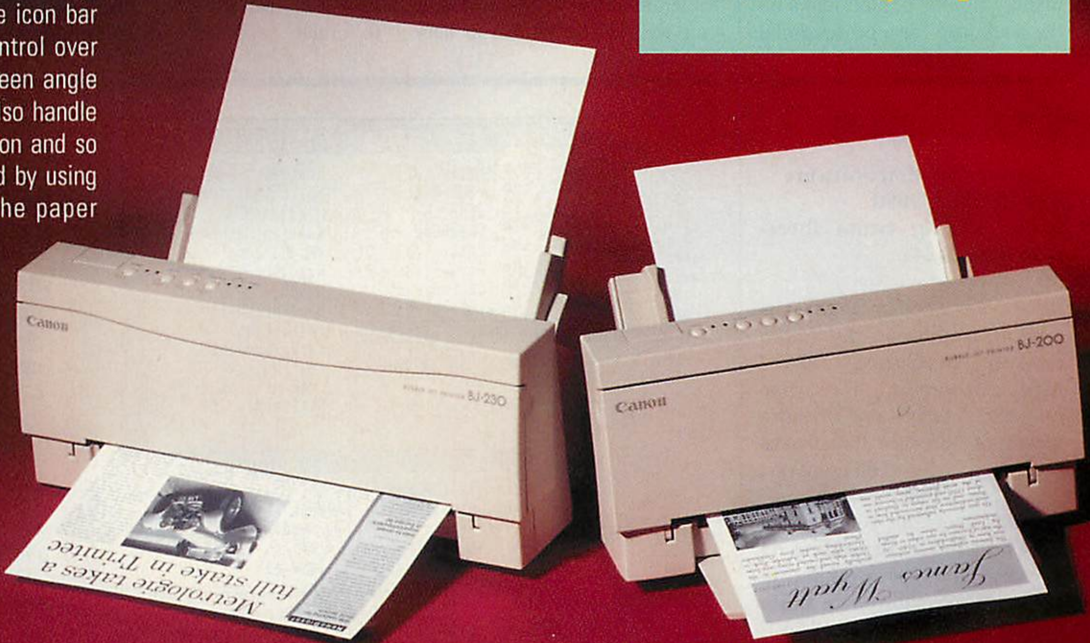
Price:
BJ-200 £275.00 + £10.00 p&p + VAT (£334.87 incl.)
BJ-230 £319.00 + £10.00 p&p + VAT (£386.57 incl.)

*The package includes the BJ-200 or BJ-230 printer with TurboDriver software, a cable, sample A4 sheets of special high quality inkjet paper.*

**THE REVIEWER'S OPINION**

*" This is probably the best inkjet printer yet. ..whether used on its own or with the excellent TurboDriver, the BJ-200 is a fast printer and the print quality is simply superb. A winner."*
**Acorn User**

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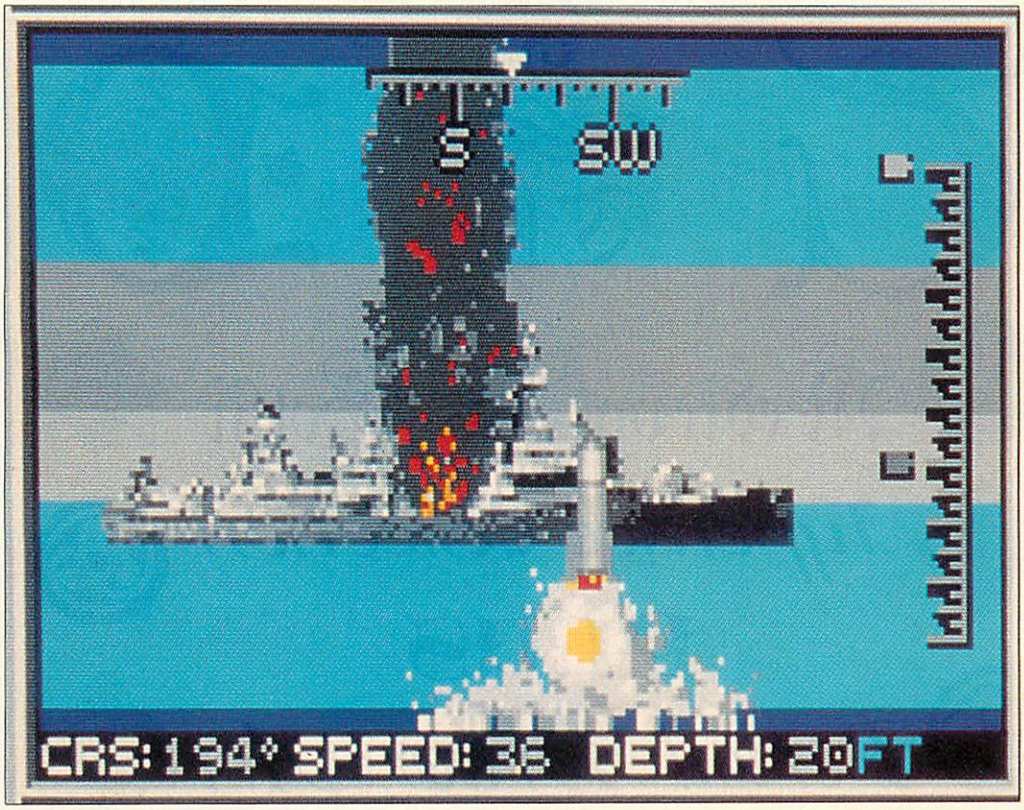

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**NB:** The BJ-230 is only suitable for use with RISC OS 3.1. The BJ-200 can be used with both but please specify which will be used at the time of purchase. Suitable for all models of Archimedes, but a minimum of 2 Mbytes of RAM is required.

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# Reinventing the wheel

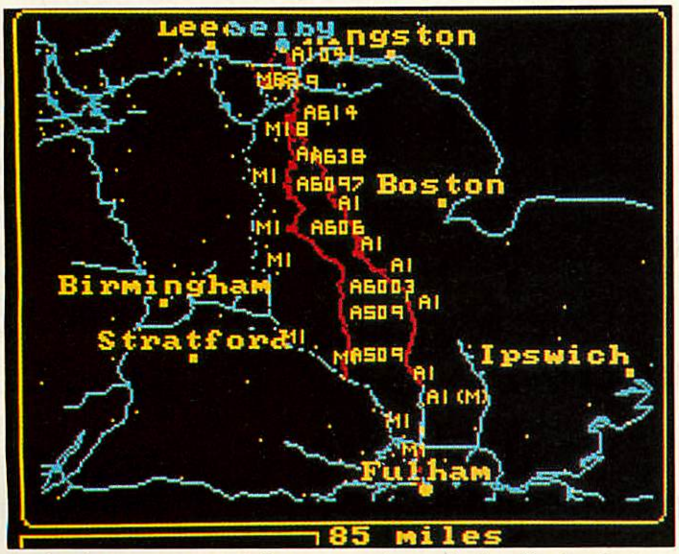
**Who in their right mind would spend a year developing a version of the PC emulator for the Arc? More to the point is it any good, and why didn't Acorn get there first?**

It's hard not to question the sanity of someone who spends over a year re-inventing the wheel. So why release a version of the PC emulator, called *FasterPC* for the Arc?

*FasterPC* runs on any Arc with a couple of megabytes memory, but you need a conventional monitor or an old multisync like the Eizo 9060 which can display Mode 12. A more modern, high-quality monitor is no use – even one with PC VGA modes 25 to 28. You also need Dos: if you already have the PC Emulator, that's no problem, otherwise it will set you back £50.

Installing *FasterPC* is simple, especially if you already have Acorn's emulator. They co-exist happily, and can share the same PC hard disc partition. Sharing with an Aleph One PC card also works, although you have to make changes to the *CONFIG.SYS* and *AUTOEXEC.BAT* files because of differences in memory configuration.

But the big question is, how does the speed compare? Running typical PC applications like *Lotus 1-2-3*, C compilers and *AutoRoute*, it is a bit slower than Acorn's emulator – considerably so for floating point calculations, as used by a spreadsheet, for example. It doesn't let you use PC extended memory, it doesn't run in a desktop window, and, as with the Acorn emulator, you still can't run *Windows 3.1* – fitting an Aleph One card is the only way. There are no supplied utilities to transfer data from the PC to the Arc environment either, though, if you have Risc OS 3, you can open the PC partition and read its files into *Edit*.




Not just for games, FasterPC also runs popular applications like AutoRoute

But this isn't where *FasterPC* shines. It is considerably faster than the Acorn emulator when displaying graphics, and this shows best when playing games. The claim that *FasterPC* is nine-times faster then the PC Emulator isn't borne out for real programs, but a two-times speed improvement is realistic.

In the States, the PC has long been a popular home machine, and so the games market is healthy. The manual contains a list of games which run, including *Populous*, *Prince of Persia* (a favourite on the Mac) and *688 Attack Sub* (pictured above). However, most run on the emulator only in 320 x 200 pixel mode. On a real PC, you can choose much better VGA graphics, which add to depth.

It's a wonder one person can put this together when Acorn's emulator has been five years in development. It runs some PC programs admirably but is limited for others.

Even for games, while the speed improvement over Acorn's emulator is worthwhile, the display is disappointing if you're used to VGA-type displays.

*Faster PC costs £19.95 from Faster PC, 33 High Street, Farnborough GU14 6ES*




You hate to throw anything away but you can only fit so much on a hard disc. Something's got to give. Or does it? Graham Bell looks at options for upping your storage capacity

# What's in store?

You can never have too much storage they say. A gigantic hard disc might look like it's stacked to the rafters with bric-a-brac, but there is always the nagging feeling the old files will come in handy. Storage is always a problem.

Arc users have always relied on hard discs for storage, and July's *Acorn User* looked at options for upgrading. But for people with specialised needs, there are alternatives.

If you dabble with Replay DIY, or even still-image grabbing with a video digitiser or scanner, then whatever hard disc you have fitted you'll run out of space. And for every big hard disc there is the problem of backing up: with a 40 or 80Mb drive, a tower of floppy discs is acceptable, but try that on a well-used network.

One answer is another big hard disc. Adding a second drive to your Arc is relatively simple, particularly if you have an A5000 or A540. The A5000 can take a second hard disc below the floppy drive. Any machine with a SCSI card can also have an external hard disc. If you already have an internal SCSI hard disc, then ensure you order the right type of cable to join up any drive: various Archimedes SCSI cards use 25-way D, 50-way IDC or 50-way Centronics-type connectors.

Number the new one 1 – the internal disc is number 0 – and move the terminator to the end of the SCSI chain. With either SCSI or IDE, you can use Configure or the utility that came with the SCSI card to add the drive icon to your desktop. But a new hard disc isn't the only option.

## Acorn high capacity storage suppliers

Al Systems, tel: (0420) 561111
HCCS, tel: (091) 4870760
Oak Solutions, tel: (0954) 211760
Morley Electronics, tel: 091-257 6355
Serial Port, tel: (0749) 670058

## Approximate Cost per Mb

As a rough guideline, storage costs when you get into the high capacity range work out on average as follows.

Floptical£400 + £1 per Mb
Syquest£450 + £0.50 per Mb
MagOpt£700 + £0.35 per Mb

## Infinite storage

The answer may be one of the 'infinite' storage systems – a Syquest drive or a magneto-optical drive. Syquest drives have been available for years, and are popular in the Mac world. They are conventional SCSI hard discs, in a cheap, removable cartridge.

There are other removable hard discs too: Conner makes the whole disc and head assembly removable. Others, like Ricoh, follow the Syquest pattern. The Bernoulli disc relies on aerodynamics to draw a 'flexible' hard disc close to the read/write head when it's spinning.

In competition with these magnetic discs, there are several flavours of optical discs. The first to be developed was the WORM disc – write once, read many. These are a bit like recordable CDs. Good for permanent archiving, but not widely used.

By contrast, magneto-optical discs are rewritable. They're coated with a special material that can be magnetised. Reading the data involves a much lower-powered beam from the laser. The disc in its cartridge can be treated just like a floppy, but is more robust. And there's no need to keep it all dust-free because there's no fragile magnetic head.

These rewritable magneto-optical disc drives are available in two formats: a 3.5in, which holds 120Mb per disc, and a 5.25in, holding between 600Mb and 1.2Gb. The larger format has only specialist uses – but the 120Mb disc drives are ideal for general needs. Sony, Panasonic, Fujitsu, Ricoh and IBM are the main manufacturers and we reviewed the Serial Port MO drive last month.

Magneto-optical discs have a number of advantages over Syquest cartridges. They are considerably more robust and reliable, and can hold more data. The 3.5in discs are the same size and about twice as thick as a 3.5in floppy – a very convenient size. The Fujitsu MO drive can be fitted internally in an A5000 if necessary. And the discs are cheaper than Syquest cartridges, which soon offsets the initially higher price of the drive. But since they are at heart quite conventional hard discs, the Syquest mechanisms work faster than MO drives. Read speeds are similar: 30-40ms access time and about 600K per second transfer rate. But the difference is apparent on writing, as MO discs need to be erased before rewriting.

Most MO drives then verify the new data. So up to three rotations of the disc are needed, compared with a single rotation for both reading and writing a Syquest or normal hard disc. This rules out MO discs as your primary disc with DIY Replay – you need a fast hard disc for digitising and storing the uncompressed video data in real time.

You can of course use MO discs for storing *Replay* files once they are compressed. One thing to watch for – both Syquests and MO drives tend to be noisy.

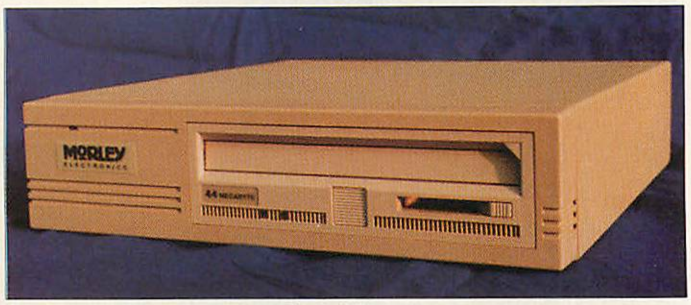
## Floptical drives

The third choice could be the floptical disc drives. These devices, which have yet to become firmly established, can store up to 20Mb of data on a more or less conventional floppy disc.

How? By packing ten times as many tracks onto the disc. A normal floppy disc drive cannot read the narrow, densely-packed tracks, particularly as the disc flexes. But the floptical drive uses a laser to follow a set of concentric rings etched on to the disc, like lane markings on a motorway. This keeps the magnetic head properly aligned over the data.

Simply by switching off this servo-tracking system, floptical drives become ordinary disc drives. So they can also read and write conventional 800K and 1.6Mb ADFS floppy discs. But they are SCSI-based, intelligent devices.

The software built into the drive itself is responsible for the detailed formatting of a disc, and the commercially-available drives are aimed at the PC market: they can read 720K and 1.4Mb Dos discs without problems. But modifying the drives to read ADFS discs for the Acorn market has proved problematic. So problematic that Morley no longer provides flopticals.



Syquest drives provide a removable 'infinite' storage system

## Software solutions

None of these solutions can just be attached to your Archimedes and used – Risc OS does not cater properly for removable SCSI devices, though some SCSI cards (for example the Morley card) make a better job than others. The exact problems depend on the combination of SCSI card and drive hardware you use.

Typically, a disc can be inserted and it will appear on the desktop iconbar, but cannot be successfully dismounted. With other equipment, discs can be ejected using the button on the front of the drive without the Archimedes noticing: this leads to the possibility of writing data to the wrong disc if another is inserted. All these non-standard storage systems usually need to be supplied with filing system and driver software to make it possible to switch discs safely while the computer is running.

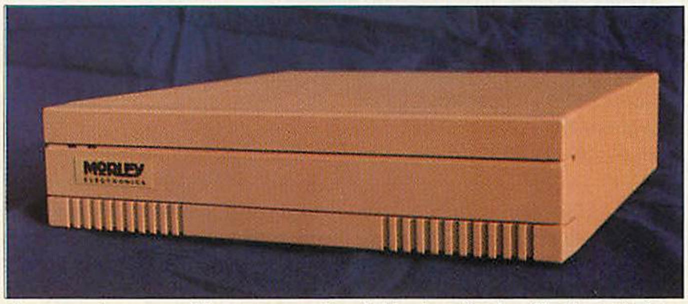


Tape streamers: a useful high-capacity option for network backup

## Tape backups

For network managers, backing up a network requires a different solution. Using a second hard disc might not be secure enough. And the various removable storage systems may have too small a capacity – under 200Mb on a 3.5in MO disc. A tape drive may solve the problem.

Quarter-inch tape cartridges are available in a variety of sizes, from DC2000 40Mb tapes to DC6250 (250Mb) and beyond. DC2000s are like precision-built tape cassettes, 6120s and 6250s about twice the size. Dat cartridges are matchbox sized, but store 2Gb. And most modern drives use a standardised recording format called DDS, and incorporate hardware data compression that boosts capacity further, to 4-6Gb. Dat drives are more expensive but have higher capacities, are quicker to backup, and tapes are cheaper and more compact. No drives sit on the desktop and Morley supplies combinations of hardware and backup software.



For some storage problems, a second hard drive is a simple, effective solution

## £15 Star letter

I am the owner of an Acorn A4 notebook. Before the release of the A4, I was considering buying a PC portable, but being an Archimedes user, the A4 was the right choice... or was it?

Its speed, performance and portability are, I feel, excellent. My main concern is its lack of expansion support. I was fully aware of the A4's limited expansion capabilities before I purchased it, but I was also aware of what was possible via its standard ports.

Like the latest fax modems (which can be used on an A4 using David Pilling's *ArcFax*) there are many peripherals available which can be connected to the serial port, or the new bi-directional printer port. Why aren't these ports being used to their full potential?

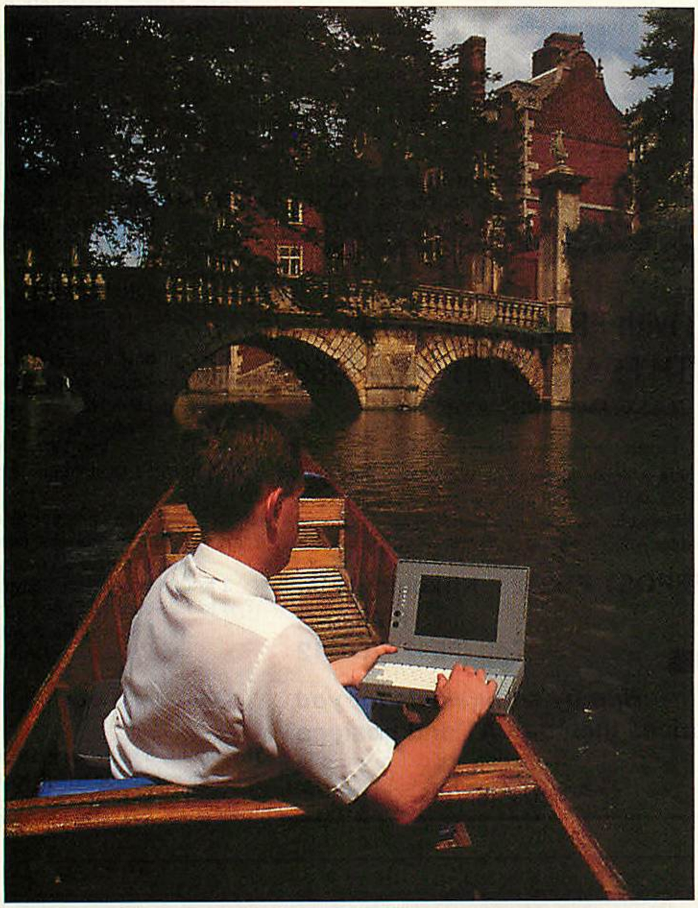
Another area for expansion is the A4's Econet interface. Vertical Twist produces a Midi interface/sound sampler that can be used in place of Econet. When I approached them for an A4 version of their product, their reply was that they were considering the possibility, but there wasn't enough demand to justify manufacturing one.

Although designed for education, the A4 is potentially a powerful business machine (I use it as one). But to compete against equivalent PC notebooks it must have a certain amount of expandability. Standard PC notebook features such as built in fax/modem, SCSI and so on must somehow be implemented if the A4 is to succeed, as must the ability to add on available peripherals.

**J Imossi**
**Gibraltar**

**Very valid letter, this. Since we covered the launch of the A4 back in August 1992, the only expansion products we've been able to find are those mentioned in this month's portable round-up (see page 50): SCSI, Econet, Ethernet, a trackerball and (gasp!) a carry case.**

**Hardly world-beating, is it? However, you can see the developers' point: why spend money on creating a product for a machine which has a very small market? It's the classic chicken and egg situation: small market without expansion, little expansion with small market. Sounds very much like the early days of the Arc, in fact.**



The A4 portable: up the creek without a paddle?

## Not-so public fonts

With reference to the question from Mr Archer in *Questions and Answers*, June 1993, converting commercial Risc OS fonts for use with ATM (Adobe Type Manager) breaks the licence conditions which apply to fonts we supply. We are, of course, quite happy to supply fonts suitable for use under ATM, and indeed any font in our library can be supplied for use under ATM running under Windows 3.1.

It would be rather ironic if the fonts Mr Archer has are PD fonts, as these will have been illegally converted to the Acorn format from ATM versions in the first place, and will not be proper Acorn fonts.

I was also interested to see a shot of *FontEd* on the same page displaying a PostScript font with a copyrighted name (Frutiger, copyright Linotype). The font was clearly converted from a Type 1 font, since the control points were all located incorrectly, nor did the font have any hinting or scaffolding. Does *Acorn User* promote the sale and use of illegally converted fonts?

**A Timbrell**
**Electronic Font Foundry**

**Absolutely not, but the above letter does show how easy it is to believe that certain fonts are public domain, even if they are available from PD libraries.**

**Acorn says in its *Applications Guide* that 'you may only use the [*T1ToFont*] application to convert public domain fonts.' But the problem is how to distinguish genuine hand-crafted public domain fonts from illegally converted ATM fonts: there's more to it than the name of the font file.**

## The last eight-bit?

**The response to the 'Bye Bye Beeb' letter in the July issue was, to say the least, characteristically emotional. Try this for a selection.**

'Yes, the BBC is officially dead, but while there are still quite a few people out there who are loyally devoted to their BBC micros, you can't just leave them out in the lurch. It's like leaving people out in the desert to cope by themselves just because they're pensioners and older than most people.'

**M Browne, Herts**

'I read with the utmost displeasure your statement that the BBC B is dead. Yes, we know that new software is not being written, but thought that those who built up their business on the original computer would not turn their backs on a good thing, as new owners would require information on problems that have already been fully covered.'

**M Jeffrey, Avon**

'I hope the many owners of BBC micros (including myself) who look for a magazine which will not desert them when a better computer arrives on the scene.'

**J Hinks, London**

'To ask contributors to provide eight-bit programs is a cop out. You have enough talent on your staff to provide eight-bit versions of your 32-bit offerings.'

**T Dooley, Middlesex**

**It *has* been fun wading through the passion and intrigue, but I think nostalgia and high expectations could be clouding the issue here. The words 'back issues' spring instantly to mind: Mr Jeffrey is right that the Beeb has been covered already, so why re-publish old articles instead of new, unseen material? And almost all of our technical experts are exclusively 32-bit based now, Mr Dooley. That's progress.**

**We can't turn the clock back to the days when the Beeb was king of the castle, and we don't want to pretend that we can.**

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### Bare Hard Drive Prices (e.g.)

127 Mb Quantum, IDE/SCSI – £215
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525 Mb Quantum, IDE/SCSI – £699
Add £18 for A5000 second drive kit

### Miscellaneous

**External keyboards for the A4 portable**
Membrane keyboard – £39.95
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**Acorn/Logitech Mouse – £28**
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ColourBurst card – £379
**Floating Point Accelerator chip – £115**
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Roland RP11 SketchMate Plotter – £579

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# GAME SHOW

Sam Greenhill updates you on releases, cheats and our competition results

Of all the different types of arcade game, it is probably the horizontal shoot-em-up which has caused the greatest battles between the games producers.

Programmers have driven themselves round the bend for years trying to create the ultimate classic arcade *R-Type*; the funny thing is that all of their efforts turn out to be much the same.

*Nevryon* was the first Acorn rendition of this type and, faithfully enough, it sported more firepower and explosions than a *Die Hard* film screened in a Russian-built nuclear power plant on the surface of a supernova. (Not that I've ever been to such a place but I reckon it would be just as apocalyptic as *Nevryon*.)

*Nevryon*'s sequel, *Technodream*, had twice as much firepower as its predecessor because it was a two-player, but perhaps the game we've all been waiting for is *Scorpius*, from Arxe Software.

There was a time, about two years ago, when this 'mother of all *R-Types*' was nearly ready. Then, a year ago, it was *actually* ready. Well, not quite. Now, it is nowhere near ready and it seems it probably never will be.

The reason? Arxe has announced that it is no longer in the Acorn market. *Scorpius*, touted as 'the best thing since sliced bread', has turned out to be about as apocalyptic as... sliced bread.

But every cloud has a silver lining. There is a game in the ancient Amiga world which needs no introductions for *R-Type* fans and it's coming this way pretty soon.

*Xenon 2* has the cornflake connection: the original and best, or at least that's how people remember it. It has lasers, more lasers, bigger lasers, more bigger lasers... the list goes on endlessly, but one thing is certain. It has cred, being one of the most popular 16-bit titles to hit the streets. Look out for it at the World of Acorn Show in October.




Technodream is the standard for R-Type clones at the moment. Not for long

## Behind the Scenes

*Speedball 2*, the ball game with the greatest violence and the fewest rules, looks like it's all set to become one of the most popular games to be released this year. Its conversion from the 16-bit world is now well under way.

## Hot Goss

Excitement is mounting among games gurus following news that the biggest, most popular, game on the PC, *Wing Commander*, is undergoing tweaks and final adjustments for its transition onto Acorn format.

The blockbuster space game, with huge explosions, super-fast flying and deadly missions, will be released in time for Christmas, by one of the world's leading games houses... no more for now but just remember, you heard it here first.

## Competition

Yup: it's another Games Show competition – just to show you how generous we are. This time you could win a selection of the hottest hits for next Christmas and a trip to the *Acorn User* office to test them all out in this unique Game Show competition.

We'll invite the winner to the office and subject them to the fastest, most gruelling games session they've ever played with the best of this year's crop.

The winner will give each game the once over in the *Acorn User* office then walk out with a copy of each game in a bag. What could be a nicer Christmas present, for you or your family? And it's not as if the competition is hard. Just choose your all-time fave 20 games for the Acorn 32-bit range and rank them in order, number one as your best. Also state the computer you use.

Write on to a postcard or back of an envelope and send to: Twenty Games, Acorn User, 101 Bayham Street, London NW1 0AG. Entries to us by 5 September.

## Cheats



### Zool

Happening Zool goes mega vegan in the fruit and veg world but do you know where he can pick up some extra bonuses? You never would have thought an innocent radish could hide much but try pulling one up – the tops poke a little way out of the ground. Just stand over them then crouch down and stand up. And if cool Zool finds four in the same place, try pulling them up in a certain sequence...



### More Lemmings!

Been there, seen it, done it? I don't think so! Things can get totally, completely wired if you over-use the built-in cheat on these extra screens built into the world's most sadistic game.

We all know that the password FIDDLECODE enables you to hit the space bar and skip levels but now there's even more: Gilbert the Bionic Hamster from London has kindly left the warmth and comfort of his cage to write to the Game Show about some secret levels.

Use FIDDLECODE to activate the cheat then go straight to the last level (code GOODBYEALL). After this level you will discover 40 identical levels – skip them all – and then you will encounter ten completely new ones!

These mysterious hidden levels are all from the two-player levels on other versions of the game. You can get at them, though Acorn users will only be able to play them single handed.

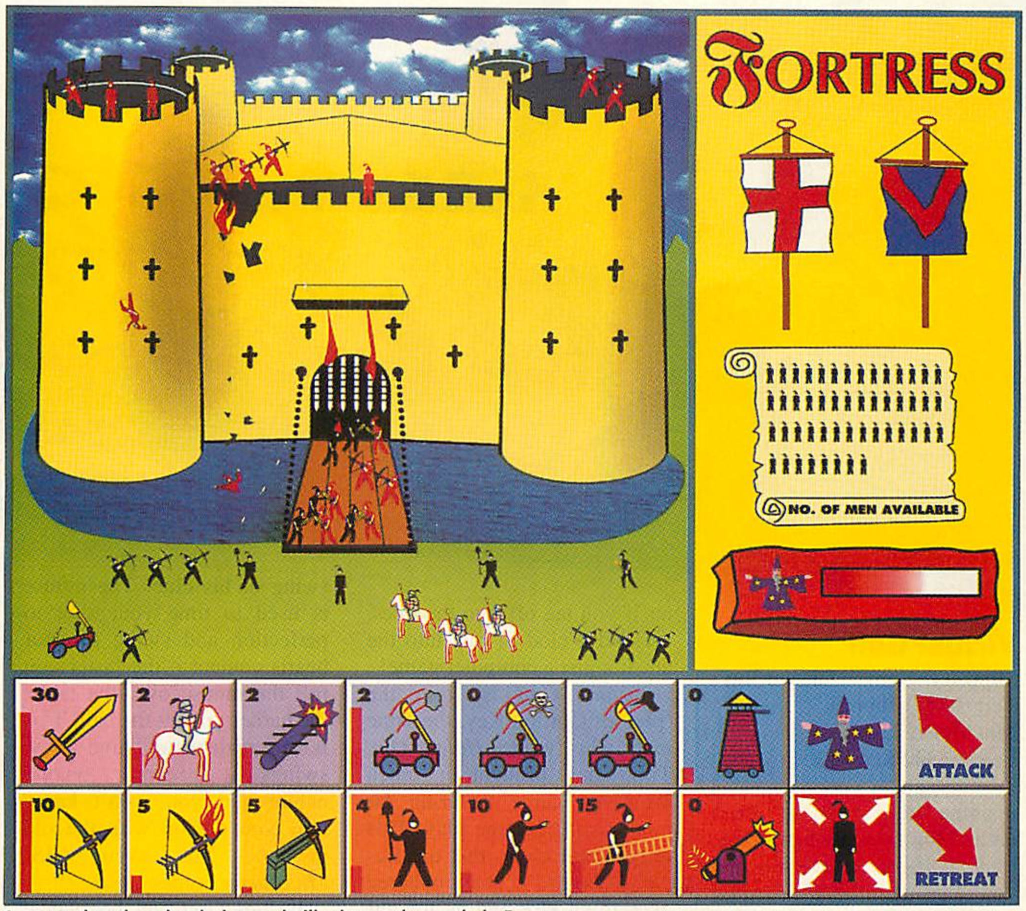
But a word of warning: watch it after those ten levels – the computer bombs out and you will need to reset it.

## Comp winners

It's summer, right. That's when you crash out in the garden, watching the England cricket team doing a Norman Lamont. Yes?

Fat chance. It's all right for you, soaking up the sun and sipping your Pimms and lemonades (well, warm Coke if you're like me), but I've had to sit down and judge the *Acorn User* Design a Game competition. In this heat.

Yeah, yeah, yeah, so you want to know who the winner is. Do you realise that if you entered and you're reading this then the chances that you've won are tiny. Really miniscule. Unless your name is Mark Harold from Bromley, Kent, in which case you're about to make a lot of friends very quickly. That's because you've just won 50 games for your Acorn, including blockbusters like *Lemmings*, *Populous*, *Guile* and all those others ones you can't afford on the dosh from your paper round.



Just another day plundering and pillaging at the castle in Fortresses

## Fortresses

So what's so good about Mark's game *Fortresses*? First off the winner had to be attention-grabbing and addictive (unlike, for instance, Arsenal) and *Fortresses* achieves just that.

It's an arcade strategy game in which you control dozens of cartoon soldiers, organised into garrisons. Ahead looms a chunky great castle surrounded by a moat. The objective? Kill, maim, shoot, catapult, throw, fire; anything you can to attack the castle. As military advisor to King Arthur you need to capture 150 castles round England and defeat the rival kings Crushyn, Frightenyn and Bashyourheadyn.

The main fighting screen has a set of icons along the bottom, à la *Lemmings*, each showing some nasty way to mutilate the enemy. So, you can send in your soldiers to beat the hell out of the castle with it, then get another bunch to sort out the battering ram while you stay well clear.

You can even send soldiers in one at a time, just for the joy of seeing the poor sods fry. Satisfaction, or what!

Hopefully, though, you'll be able to get shot of all of the bad guys; storm the castle and take control of it; then move onto the next.

But *Fortresses* is not all about action, oh no. Mark has designed it so that you need to invent your weapons of destruction before you can use them to pulverise the hapless enemy. In the strategy/simulation part of the game you have to allocate resources to scientists, engineers and the army. Underfunding these areas will lead to shoddy designs, or to bad workmanship.

There are also some promising extras, like the Merlin the Magician icon which you can use to put a stop to any foolish attempts by the enemy to try to beat you up. They won't be pouring oil for long with their hair set on fire, eh Merlin!

Nice one Mark, you've got yourself a winner design here; let's hope it will one day be a real game. Remember: nothing's impossible. Well, except a Labour government, maybe.

## Record breaking entries

- **LONGEST:** *Dragon Warrior*, Andrew Sole: 36 pages. Get a *life*, Andrew.
- **MOST VIBRANT:** *Upmarket*, Mary Graham: moving parts in the form of pop-up book style 'pull' tabs.
- **MOST SADISTIC:** *Bluey*, Duncan and Richard Hemlock: killin' wabbits.
- **SLIMIEST:** *The BBC Acorn User Game*, Tom Howell: you play the editor trying to get an issue together. (*Call this a game?!*)
- **MOST SATIRICAL:** *Paxman*, J Medlock: as Jeremy Paxman you've been sacked and must do a tour of damage round the TV studios getting revenge (in level one you have to try to make Wogan shut up).
- **MOST FRIGHTENING:** *Survival of the Fittest*, Jack Welsby: prevent chimps from intellectually taking over Earth.
- **MOST INNOVATIVE:** *Lazer*, Debbie Simpson: a sailing simulator.

## The runners up

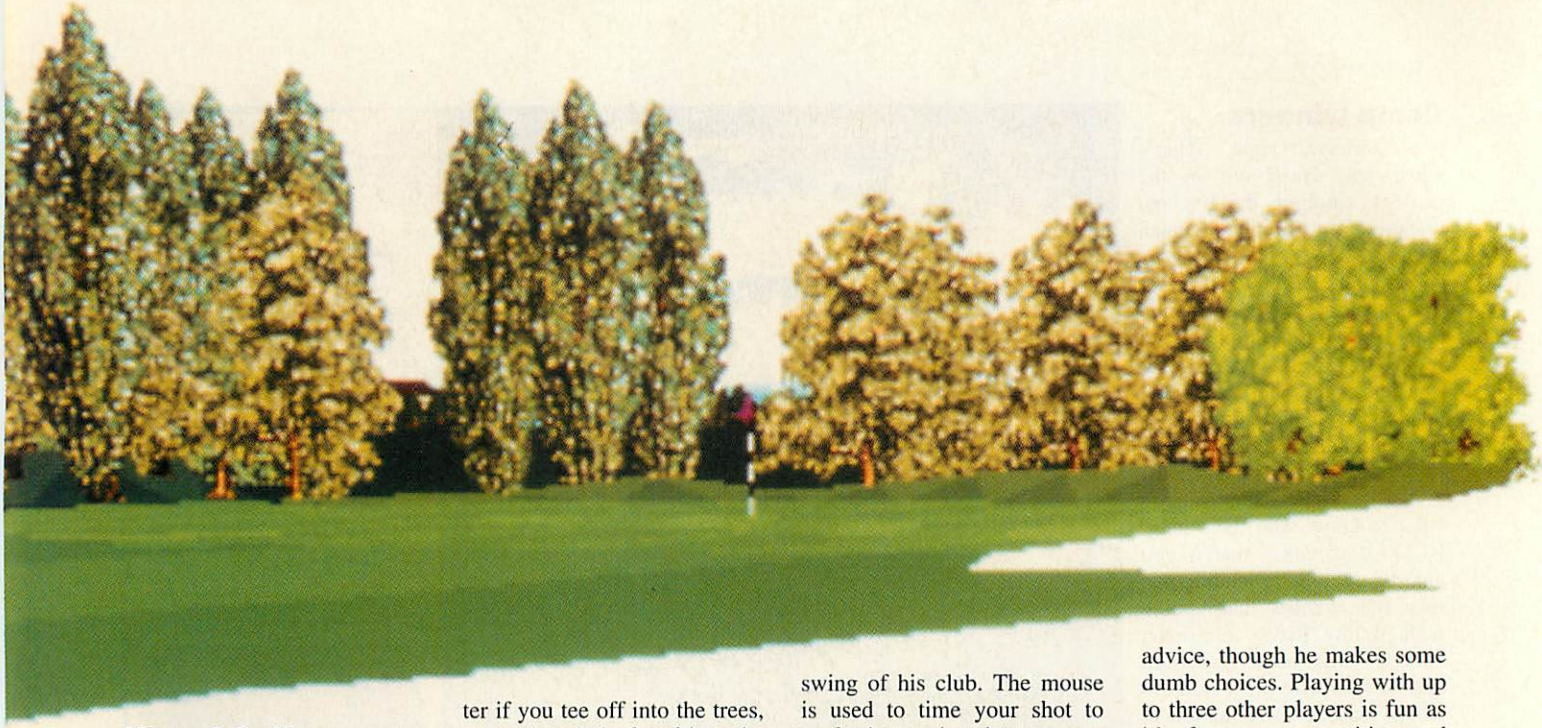
The quality of entries was extremely high: no joke. *Of Mice and Men* from James Burke and Robin Carlisle is an idea for an arcade adventure in which you play a house mouse trying to rescue your brother Frank, who's disappeared.

To get help you must gain total respect from the other mice by performing a number of missions, all against Kevin, son of the Mouse Elder. (Hang on a sec. Kevin the Mouse? *Kevin*? Big bad man-devouring mice need names like Slayer or Hrull, not *Kevin*. Huh! Still, it's a good game concept.)

Another good game design is *Houdini's Revenge* from James Anderson, about Houdini the hamster. Another rodent game. *Lemmings* influenced, perhaps?

Anyway, that's your lot. If I didn't mention your entry, sorry. It's nothing personal, I just get this way when deprived of sunrays. Here's to the next competition...

**Sam Greenhill**



## Virtual Golf

**Supplier: Fourth Dimension**
**Tel: (0742) 700661**
**Machines: 32-bit**
**Price: £34.95**

Imagine this: you've been invited for a round of pro-celebrity golf on television and you're going to be watched by millions (well, dozens...). The course is Wentworth and there's no excuse big enough to save yourself from this horrific experience.

Calm down! It doesn't matter if you tee off into the trees, or send a clod of turf into the air. It's just a computer game!

*Virtual Golf* is from the 'pen' of Gordon Key, the same man who wrote *Holed Out*. Time has brought a much improved game featuring far more realistic game play. This only meant for us that quadruple bogies outnumbered everything else and as for our handicap, well we thought 80 wasn't too bad.

The graphics are indeed impressive. The yards of fairway stretch before the eye in a beautiful panorama. The acres of rough also seem endless and certainly bring you back to reality. The greens? Well the groundsman does seem to have done his job and there is a distinct lack of molehills. Even our amazing strokes seemed to leave it all intact and divot-free.



The attention to detail is excellent: you can pick out the individual leaves on the trees and the sumptuous villas where the loaded pros reside. Okay, so there aren't any squirrels for target practice, but this isn't a shoot-em-up.

*Virtual Golf* is an improvement on most golf games available for Acorn machines at the moment. The actual swinging of the club is the closest thing you will get to the real thing on offer. Instead of the normal power-meter method you move the mouse from right to left and the golfer simultaneously mimics the movement with a complete swing of his club. The mouse is used to time your shot to perfection and swing to your hearts content – the faster you roll the mouse over the table, the harder you hit the ball. This is very realistic and after a few swings it becomes second nature and you won't know how you put up with the old method. Not even CIS' *Microdrive* comes close.

*Virtual Golf* can be played by up to four people who all look like Nick Faldo only sporting a slightly different hairdo. If only our performance matched that of the great man himself.

**'Virtual Golf can be played by up to four people who all look like Nick Faldo but with a slightly different hairdo.'**

For the hardened pro there are six tournaments which you can progress through, ranging from the inaugural Beginner's Knockout to a Major, the prestigious British Open. By that point you are in with the big boys. Your handicap will have shrunk to two but your ability will have improved.

There's hours of fun and this is helped by the novel feature of saving your score card so you may resume your round at leisure, cutting out the need for marathon pitch and putt sessions. *Virtual Golf* also runs from the desktop, like *Elite*, so it can be loaded alongside other applications, assuming you've enough memory – Virtual Golf needs at least 2Mb.

Another feature is the know-all caddie who advises you on what clubs to use. At first it's probably best that you take his advice, though he makes some dumb choices. Playing with up to three other players is fun as it's far more competitive and the par score isn't so vital.

It is also very easy to get into and, after a few holes, you'll have sussed the controls. The attention to detail is noteworthy: you can play in any of the four seasons and the ball will behave differently according to how hard the ground is, and so on. On the down side, the sound is pretty minimal, limited to a swish of the club and a slight 'thwack' as you hole out and strike the ball. But it is a golf game so what do you expect: explosions?

Another limitation: there is only one course: 'based on' Wentworth. Now, that may be a fine venue for the gentlemen's game but it does grate after a while. This irritation is compounded by the fact that there is no built-in course designer, as in *Superior Golf*.

There are contours (which *Microdrive* also has) but here they are a bit flat and sobering. *Virtual Golf* lacks many features but is the best in terms of taking the actual shot, and perhaps this is the most important. There are even action replays.

*Virtual Golf* is the best golf game so far. It looks good and feels good, but if you're already the proud owner of a golf game, then think carefully before you invest again.

**John Revill & Rupert Hamer**

# THE DUNGEON







## THE DUNGEON

Created by MARTIN DENNETT
with assistance from JOHN PARKER,
DAVID POSTLETHWAITE and GORDON KEY.

-o-

They had found the entrance, overgrown and carefully blocked up, near the top of a cliff, just as on the parchment . . .

. . . Without warning, the floor they had moved onto dropped almost imperceptibly downwards with a sharp click and gaping holes opened up in the path in front and behind them, leaving them stranded on a pillar of rock. Moroth cursed their stupidity at falling into such a trap, and at that very moment the floor under their feet also vanished and they tumbled and slid down and down, to land dazed in a heap on a wooden pad in a small room far below . . .

So easy to enter, so hard to leave. You will control the four adventurers as they spend days exploring their vast prison, gradually working their way upwards level by level, fighting off foul creatures without number, using cunning to evade and solve traps and puzzles designed to guard the wealth of the dungeon. Making the most of the objects you find including ancient spell scrolls and a deadly array of weaponry, you may eventually reach the hall where they fell into the first trap of the dungeon network, and so escape carrying as much treasure as you can.

## THE DUNGEON *features*

STUNNINGLY SMOOTH AND REALISTIC, THREE-DIMENSIONAL, DEPTH SHADED GRAPHICS AT UP TO 12½ FRAMES PER SECOND.

•

TELEPORTERS, PADS, DOORS, PORTCULLISES, PITS, CHASMS, STAIRCASES, SECRET ROOMS AND MORE.

•

CHARACTERS WHOSE FIGHTING AND SPELL CASTING ABILITIES CAN BE BUILT UP PROGRESSIVELY.

•

SAVE GAME FACILITY.

•

STEREO SOUND EFFECTS.

•

FLUID MOUSE OR KEYBOARD CONTROLLED MOVEMENT.

•

WEAPONS, CLOTHING, ARMOUR, FOOD, DRINK, POTIONS, SCROLLS AND MUCH TREASURE.

•

MACHINES WITH AN ARM3 PROCESSOR CAN SELECT AN ENHANCED MODE, GIVING ASTOUNDINGLY SMOOTH ANIMATION AT UP TO 25 FRAMES PER SECOND.

***For All 32-bit Acorn Risc Machines***
***Requires 2 Megabytes £34.95***

The Fourth Dimension, 1 Percy Street, Sheffield, S3 8AU
Tel: (0742) 700661 or 769950

Access VISA









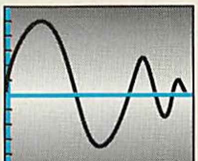
## Opening Hours Monday-Saturday 10.00 to 18.00

## QuickShow £25+VAT

**!QuickShow**
*Video Titling*
*&*
**Slide Show Presentation**
**Has never been easier!**

The easy to use slide show presentation and video titling package. Create sequences of frames containing text of any colour with drop shadows, outline shadows and rubout boxes using the RISCOS fonts. Sprites can also be included in frames and positioned and resized as necessary. Several screens can be linked together with the sequencer which allows you to fade each screen out and in with the many fades provided. Completed sequences can be converted into stand alone applications. 2Mb RAM required and a hard disc is recommended.

## QuickSnd £10+VAT



Load, play, convert & resave existing Armadeus, Tracker and raw data sound samples and apply special effects including Reverse, Echo, Max Vol, alter replay rate and resample frequency. Convert samples into modules for use with the RISCOS sound system etc. Create stand alone Utility modules which when called, via star commands, automatically play and then remove itself completely from memory (this feature is not available on any other sound package). Use Utility sound modules with RISCOS Alarm to play on activation of an alarm. On screen VU meter included.

## CD-ROM Multimedia

**Acorn Multimedia Expansion System** £499
Comprises A4000 style case complete with power supply, SONY multi-session CD-ROM drive, pre-amplifier with headphone/phono inputs/outputs, CD caddy, etc. The unit can also house a 3.5" SCSI hard disc and another CD-ROM drive or Magneto Optical SCSI drive.

**External Toshiba CD-ROM Drive (The fastest available)** £399
The above drive is a triple spin speed unit and is PhotoCD compatible. The unit is housed in its own case with power supply and comes with one caddy.

## Magneto Optical Drives (SCSI)

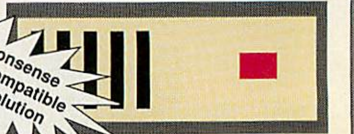
**128Mb Magneto Optical SCSI Drive 28ms 1" high** £699
The above unit is a bare drive and can be mounted in the spare floppy bay of an A5000 or in an external case for other machines. SCSI interface extra.

| | |
|---|---|
| External case for above | £69 |
| **128Mb Blank Discs** | £39 |
| **A5000 Econet SCSI Interface** | £49 |

**Add £139 to above prices for Morley SCSI Interface.**

## Hard Discs IDE

The no nonsense RISCOS 3 compatible HardDisc solution



The following are complete systems comprising of the NEW Desktop Projects IDE interface, hard disc, mounting brackets, cables, utilities disc and manual.
**RISCOS 3.10 or later required.**

**Archimedes 3.5" Internal**
Not suitable for A3k,A3010-A3020

| | |
|---|---|
| 120Mb 16ms Cache | £250 |
| 170Mb 16ms Cache | £300 |
| 250Mb 13ms Cache | £350 |
| 330Mb 12ms Cache | £Call |
| 520Mb 12ms Cache | £Call |

**Archimedes 2.5" Int Hard Card**
Not suitable for A3010-A3020

| | |
|---|---|
| 80Mb 28ms | £295 |
| 120Mb 28ms | £375 |

add £15 to above for A3000 Ext

**A3000/Archi/A5000 External**

| | |
|---|---|
| 120Mb 16ms Cache | £320 |
| 170Mb 16ms Cache | £370 |
| 250Mb 13ms Cache | £420 |
| 330Mb 12ms Cache | £Call |
| 520Mb 12ms Cache | £Call |

**DTP IDE Disc Controller** £99
Complete with cable, guide & disc
Works with Conner, Quantum Samsung, Maxtor & Fujitsu.

**A5000 Second/Exchange Drives**

| For A5000's only. | 2nd | Exch |
|---|---|---|
| 120Mb 11ms Cache | £200 | £150 |
| 170Mb 11ms Cache | £250 | £200 |
| 250Mb 15ms Cache | £350 | £300 |

**HCCS A3000 IDE Hard Cards**

| | |
|---|---|
| 20Mb Internal+User Port | £179 |
| 60Mb Internal+User Port | £269 |

**HCCS Ultimate Multi-Podules**

| With IDE Hard Disc | A3000 | A3010 |
|---|---|---|
| 20Mb Internal | £269 | £269 |
| 60Mb Internal | £399 | £399 |
| 80Mb Internal | £399 | £399 |

## SCSI

The following are complete hard disc systems comprising of a Morley SCSI interface, HardDisc, brackets, cables, disc & manual.

**Archimedes Internal**
Not suitable for A3k,A3010-A3020

| | |
|---|---|
| 120Mb 18ms Cache | £395 |
| 200Mb 18ms Cache | £545 |
| 330Mb 12ms Cache | £Call |
| 520Mb 12ms Cache | £Call |

**A3000/Archi/A5000 External**

| | |
|---|---|
| 120Mb 18ms Cache | £475 |
| 200Mb 18ms Cache | £625 |
| 330Mb 12ms Cache | £Call |
| 520Mb 12ms Cache | £Call |

The above are ext units with card.

**SCSI Controller Cards**

| | |
|---|---|
| Morley Uncached | £139 |
| Morley Cached | £179 |

## Archimedes, A3000, A5000 Software

### Applications

| | |
|---|---|
| ABC Compiler (Oak) | £77 |
| Advance (Acorn) | £95 |
| Ancestry (Minerva) | £59 |
| Arc DFS (Dabs) | £22 |
| ArcComm2 (Logotron) | £52 |
| ArcLight (Ace) | £40 |
| ArcTerm 7 (Serial Port) | £62 |
| Arctist (4D) | £20 |
| Armadeus (Clares) | £65 |
| Artisan 2 (Clares) | £49 |
| Art Works (CC) | £129 |
| AUN/Level 4 FileServer (Acorn) | £395 |
| Autosketch v2 (Autodesk) | £65 |
| Cable News (Lingenuity) | £165 |
| CADet (Minerva) | £139 |
| Chameleon 2 (4Mation) | £35 |
| ColourSep (ICS) | £15 |
| Compression (CC) | £35 |
| Control Panel (Lingenuity) | £14 |
| Desktop Assembler (Acorn) | £125 |
| Desktop C (Acorn) | £180 |
| Desktop Office (Minerva) | £95 |
| Desktop Thesaurus (RISC Dev) | £19 |
| Digital Symphony (Oregan) | £43 |
| Draw Print-Plot (Oak) | £39 |
| EasiWord 2 (Minerva) | £55 |
| EasyWriter II (Icon Tech) | £126 |
| Einstein (Ace) | £106 |
| Equasor (CC) | £37 |
| Euclid 2 (Ace) | £55 |
| Eureka (Longman) | £99 |
| Font FX (DataStore) | £9 |
| Gammaplot (Minerva) | £36 |
| Genesis 2 (Oak Solutions) | £109 |
| Graphbox v2 (Minerva) | £57 |
| Graphbox Pro (Minerva) | £109 |
| Hard Disc Companion II(RISC) | £45 |
| Hearsay II (RISC Dev) | £69 |
| Hotlink Presenter (Lingenuity) | £41 |
| Home Accounts (Minerva) | £34 |
| Illusionist (Clares) | £79 |
| Imagery (Palette Studios) | £69 |
| Impression v2 (CC) | £125 |
| Impression Junior (CC) | £75 |
| Impression Bus Supp (CC) | £39 |
| Inter-Sheet II (CC) | £30 |
| Inter-Word (CC) | £30 |
| MasterFile III (RISC Dev) | £47 |
| Midnight Express (Mid. Graph.) | £39 |
| Mogul (Ace) | £20 |
| Notate (Longman) | £54 |
| Ovation (RISC Dev) | £95 |
| PCB (Oak) | £99 |
| PC Emulator (Acorn) | £95 |
| PenDown Plus (Longman) | £68 |
| Pin Point (Logotron) | £79 |
| PipeDream 4 (Colton) | £119 |
| Playback (RISC Dev) | £17 |
| Poster (4Mation) | £75 |
| Presenter 2 Hotlink (Lingenuity) | £33 |
| Presenter GTi (Ling) | £66 |
| Pro Artisan (Clares) | £79 |
| ProArtisan2 (Clares) | £110 |
| ProDriver DJ500C/550C (Ace) | £39 |
| Realtime Solids Modeller (Sil) | £99 |
| Render Bender v2 (Clares) | £99 |
| Resultz (Colton) | £TBA |
| Revelation II (Logotron) | £110 |
| Revelation ImagrPro (Logotron) | £127 |
| Rhapsody v2 (Clares) | £49 |
| Rhapsody v3 (Clares) | £79 |
| RISCType (CIS) | £16 |
| Rythmn Bed (Clares) | £40 |
| S-Base Personal (Longman) | £79 |
| S-Base Developer (Longman) | £175 |
| S-Base Developer + (Longman) | £275 |
| Schema (Clares) | £99 |
| Serenade (Clares) | £109 |
| ShapeFX (Datastore) | £9 |
| ShowPage (CC) | £130 |
| Sleuth (RISC Dev) | £47 |
| SmArt (4Mation) | £50 |
| SmArtFiler (4Mation) | £32 |
| Snippet (4Mation) | £35 |
| Sound FX Maker (CIS) | £32 |
| Speech! (Superior) | £15 |
| Splice (Ace) | £27 |
| Squirrel Database (Dig Serv) | £120 |
| Squirrel 'C' Developers Toolkit | £99 |
| StartWrite (Icon) | £55 |
| TechWriter (Icon) | £159 |
| Titler (Clares) | £119 |
| Topogropher (Clares) | £69 |
| Touch Type (IOTA) | £39 |
| Tracker (Serial Port) | £37 |
| TurboDrivers Canon BJ (CC) | £42 |
| TurboDrivers HP (CC) | £42 |
| Turbo-Type (CIS) | £20 |
| Tween (Ace) | £27 |
| TypeStudio (RISC Dev) | £43 |
| Vector (4Mation) | £75 |
| Vox Box (Clares) | £49 |
| WordWorks (CC) | £38 |
| Wordz (Colton) | £95 |
| Worra CAD (Oak) | £83 |

Items in red are New/Low price

### Games

| | |
|---|---|
| A3010 Stick Controller (Arm-T) | £17 |
| Aggressor (Atomic) | £19 |
| Air Supremacy (Superior) | £17 |
| Alderbaran (Evolution) | £26 |
| Axis (TBA Software) | £19 |
| Bambuzle (Arxe Systems) | £19 |
| Battle Chess (Krisalis) | £22 |
| Black Angel (4D) | £26 |
| Blaston (Eterna) | £15 |
| Blitz (Arxe Systems) | £15 |
| Boogie Buggy (4D) | £19 |
| Break 147 & Superpool (4D) | £26 |
| Bug Hunt, MoonDash (Min) | £15 |
| Bug Hunt in Space (Minerva) | £15 |
| Cataclysm (4D) | £19 |
| Champions (Krisalis) | £22 |
| -Includes Man Utd, J Khan Squash, | |
| -Wld Class Leaderbrd & Boxing Mngr | |
| Chess 3D (Micro Power) | £19 |
| Chocks Away 2 (4D) | £19 |
| Chocks Away Extra Miss(4D) | £15 |
| Chocks 2 Compendium (4D) 2Mb | £26 |
| Chopper Force (4D) | £22 |
| Chuck Rock (Krisalis) | £19 |
| Cyber Chess (4D) | £26 |
| Cyborg (Alpine) | £19 |
| Cycloids (Software 42) | £19 |
| Dragon's Lair (4D) | £19 |
| Dreadnoughts (Turcan) | £26 |
| Dungeon (4D) | £26 |
| Elite (Hybrid) | £32 |
| Enter the Realm (4D) 2Mb | £19 |
| E-Type Compendium (4D) | £19 |
| Fervour (Clares) | £19 |
| FRED (Software 42) | £17 |
| Galactic Dan (4D) | £19 |
| Games Wizard (Leading Edge) | £26 |
| GODS (Krisalis) | £19 |
| Gribbly's Day Out (Coin-Age) | £19 |
| Guile (Dream) | £22 |
| Heimdall (Krisalis) | £22 |
| Hero Quest (Krisalis) | £22 |
| Holed Out Compendium (4D) | £19 |
| Ibix the Viking (Minerva) (OS2) | £15 |
| Iron Lord (Cygnus) | £15 |
| Ixion (Software 42) | £19 |
| James Pond (Krisalis) | £19 |
| Kerbang (Eterna) | £15 |
| Krisalis Collection | £22 |
| -Includes, Mad Professor Mariarty, | |
| -Pipemania, Terramex & Revelation | |
| Last Ninja (Superior) | £19 |
| Legend of the Lost Temp (OS2) | £19 |
| Lemmings (Krisalis) | £19 |
| Loopz (Audiogenic) | £19 |
| Lotus Turbo Challenge II (Kris) | £19 |
| Mah-Jong Patience (CIS) | £15 |
| Mah-Jong The Game (CIS) | £19 |
| Man United Europe (Krisalis) | £19 |
| Micro Drive 2 (CIS) | £26 |
| Mig-29 Fulcrum (Domark) | £25 |
| Nebulus (Krisalis) | £19 |
| Oh No More Lemmings (Kris) | £15 |
| Omar Sharif's Bridge (Krisalis) | £22 |
| Orion (Minerva) | £15 |
| Pandora's Box (4D) 2Mb | £19 |
| Paradroid 2000 (Coin-Age) | £19 |
| Pesky Muskrats (Coin-Age) | £19 |
| Play It Again Sam1 (Superior) | £19 |
| -Includes Conqueror, Rotor, | |
| -No Excuses & Hostages | |
| Populus (Krisalis) | £22 |
| Powerband (4D) | £19 |
| Quark (Oregan) | £19 |
| Quest for Gold (Krisalis) | £19 |
| Repton 3 (Superior) | £19 |
| Repton 4 (Superior) | £19 |
| Rockfall (Eterna) | £16 |
| Real McCoy 2 (4D) 2Mb | £26 |
| -Includes Apocalypse, Holed Out, | |
| -The Olympics & Inertia | |
| Real McCoy 3 (4D) 2Mb | £26 |
| -Includes Powerband, Nevryon, Drop - | |
| Ship & The WIMP Game | |
| Real McCoy 4 (4D) | £26 |
| -Includes Galactic Dan, Grievous | |
| -Bodily 'ARM, Cataclysm & X-Fire | |
| Saloon Cars Deluxe (4D) | £26 |
| Saloon Cars Del Extra Courses | £15 |
| Serpents (CIS) | £15 |
| Sim City (Krisalis) | £26 |
| Spheres of Chaos (Matt Black) | £19 |
| Superior Golf (Superior) | £15 |
| SWIV (Krisalis) | £19 |
| Technodream (Superior) | £19 |
| ThunderMonk (Minerva) | £15 |
| Tiles (Brain Games) | £15 |
| Top Banana (HEX) | £19 |
| Twin World (Cygnus) | £15 |
| Virtual Golf (4D) | £26 |
| Waterloo (Turcan) | £19 |
| X-FIRE (4D) | £19 |
| Zarch (Superior) | £15 |
| Zool (Gremlin Graphics) | £20 |

2Mb - RAM required for RISCOS3.1
OS2 - Runs on RISCOS2 only

### Education

| | |
|---|---|
| Adv. Playground 5+ (Storm) | £17 |
| Amazing Ollie 4+ (Storm) | £14 |
| Arcventure I-Romans 8-9 | £28 |
| Arcventure II-Eqyptians 10-12 | £28 |
| Badger Trails (Sherston) | £37 |
| Coffee 9+ (Storm) | £28 |
| Concept Designer (Logotron) | £23 |
| Crossword+ 8+ | £19 |
| Crystal Rainforest (Sherston) | £35 |
| Darryl the Dragon (4Mation) | £19 |
| Desktop Folio (ESM) | £89 |
| Farmer Giles 2 (CTS) | £17 |
| FirstLOGO (Longman) | £22 |
| First Words & Pictures (Chk) | £26 |
| Flight Path 9+ (Storm) | £28 |
| Freddy Teddy (Topologika) | £19 |
| Freddy Teddy's Adv (Topol.) | £17 |
| Fun & Games 5-9 | £18 |
| Fun School 2 (Database) | £15 |
| Fun School 3 (Database) | £18 |
| Fun School 4 (Database) | £18 |
| (Please spec. age group <5, 5-7, >7) | |
| Giant Killer (Topologika) | £17 |
| Granny's Garden (4Mation) | £23 |
| House of Numbers (Chalk) | £19 |
| Junior Database (Iota) | £45 |
| Letters and Pictures (Chalk) | £18 |
| Logo (Logotron) | £60 |
| Magpie (Logotron) | £49 |
| Maps & Landsc. 1/2 (Chk) ea. | £19 |
| Nature Park Adventure 7-9 | £27 |
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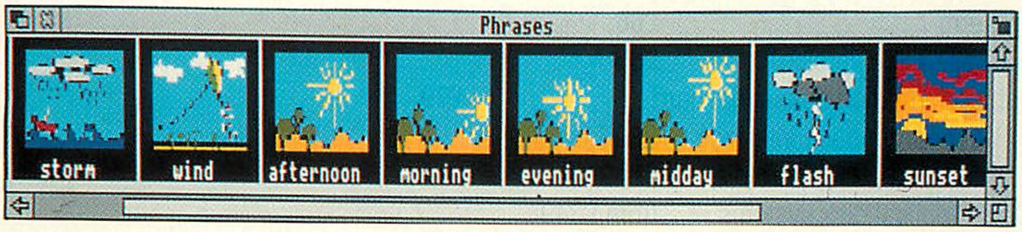
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Access VISA SWITCH

SEP 93

# Music to your ears

Compose was a big hit in the schools. Now, with Compose World Richard Garrett thinks ESP has struck the right note




Display sizes can be easily altered in Compose World to suit the user, here allowing eight frames to run side-by-side

A few more years ago than he cares to remember, Andy Pierson of ESP wrote an application called *Compose* for the BBC Micro. This allowed children to assemble tunes from predefined musical 'building blocks' and hear them played by the computer.

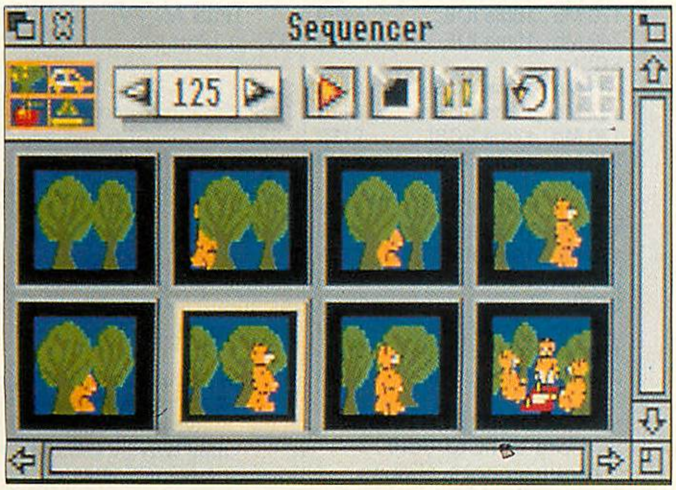
Despite the aesthetically-challenged nature of the BBC sound system, *Compose* was pretty popular in primary schools and was later rewritten as a full screen program for the Archimedes. This year, it was reincarnated under Risc OS as *Compose World*.

When a child opens a *Compose World* file, he is presented with two windows. The first, marked 'phrases', contains a number of square pictures, each of which represents a fragment of music. The second window, called the sequencer, contains a grid of blank squares, a set of 'tape recorder' icons and a tempo control. To write a tune, the child drags pictures from the phrase window and drops them onto the sequencer grid in whatever combination and order seems appropriate. When they're in the right order, he selects the Play icon.

The computer plays each fragment in succession using either the Arc's internal sounds or external MIDI devices. If the tune needs changing, he can replace or delete phrases by dragging pictures into and out of the grid. When the tune is complete, it can be saved to disc. There is an optional third window, called Display, which shows enlarged versions of each picture as it plays.

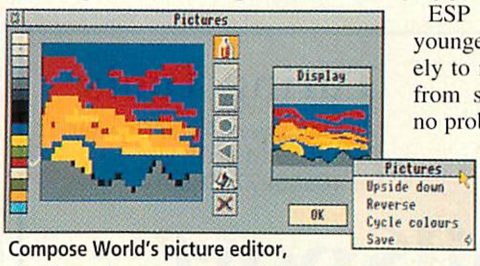
The package includes 35 example files to illustrate the different ways it can be used. Some are collections of useful components for making your own tunes and others contain phrases which can be arranged, jigsaw fashion, until they play well-known tunes. My favourite is *The Teddy Bears' Picnic*, which produces an animation of teddies who walk through the woods and arrive at a picnic site in the last couple of bars. If the demos get boring, you can make new files by mixing existing components using File Merge.

*Compose World* has two editors with which you create and modify the phrases/pictures used to build tunes. These are Picture Editor and Phrase Editor. Picture Editor alters the sprites that represent each phrase. Although *Compose World* phrases all use 48 x 24 pixel Mode 12 sprites, the program imports images of any size and scales them.




If you go down to the woods today...

Phrase Editor is a variation on a piano roll sequencer,




Compose World's picture editor, showing colour range at the left

where notes are shown as blocks on a rectangular grid whose horizontal axis shows time in beats and whose vertical axis shows pitch. An unusual feature is that its vertical axis can be configured to different musical scales: major, minor, chromatic, pentatonic and so on, or customised to any scale you like.

When you select a scale, only those notes that fall within it are shown on the grid so, for example, if you're writing in pentatonic mode, each octave shows just five notes and ignores the other seven. Phrases can play more than one note at a time and each voice can be assigned to a different internal or Midi sound.

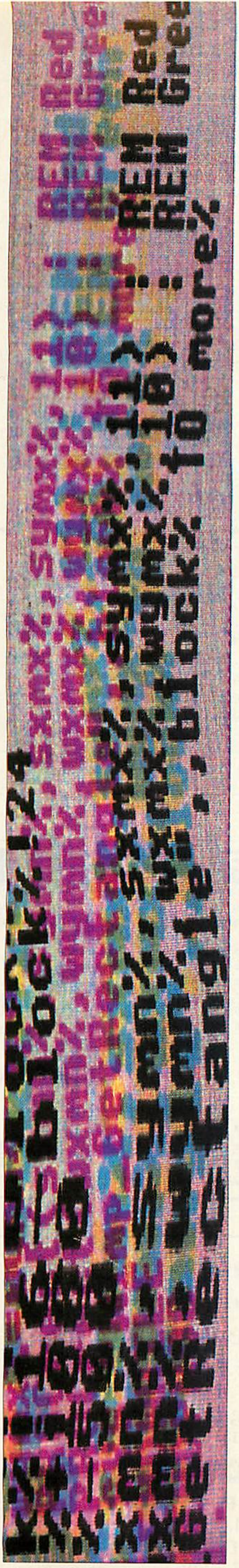
There are loads of edit features for pitch, duration and intensity ranging from traditional features to more novel ones like Invert which reflects each note about the middle note of the scale, and Reverse Rhythm which reverses lengths of notes in a phrase without changing pitch.

ESP says that though younger kids are unlikely to make new phrases from scratch, they have no problem editing existing ones to make variations of their own.

*Compose World* is the musical equivalent of a clip art graphics program, and while it is designed mainly for children at key stages 2 and 3, it could be enjoyed by people on either side of that range. I certainly had fun. At its simplest, it needs no formal musical knowledge. The move to the desktop has made this application much easier to use and definitely more pleasant to listen to.

## Product details

**Product: Compose World**
**Supplier: Expressive Software Projects**
**Tel: (0602) 295019**
**Price: £48.00 + VAT (includes site licence); Files 1 support pack £12.00+VAT; Voice Pack 1 £15.00+VAT**



MACK MANNING

# Back to basics

In the second part of his Basic programming series, Mark Moxon takes a look at the different types of variable and shows them in action

Right, so now you're able to type in programs and run them. Great. Now comes the tricky part: learning to create your own.

The first step in most tutorials is to look at the concept of a variable, and, just because this series is far cooler than most, there's no reason why we shouldn't start that way too. So, what's a variable?

The BBC Basic Guide says 'a variable has a name and a value associated with it'. This means we can invent a variable name for ourselves, and give it a value. So, if you want to define the number of eggs in a basket as seven, you create a variable called number_of_eggs with value 7 (variable names can't contain spaces, so we have to use underline). The command to do this is:

```
number_of_eggs=7
```

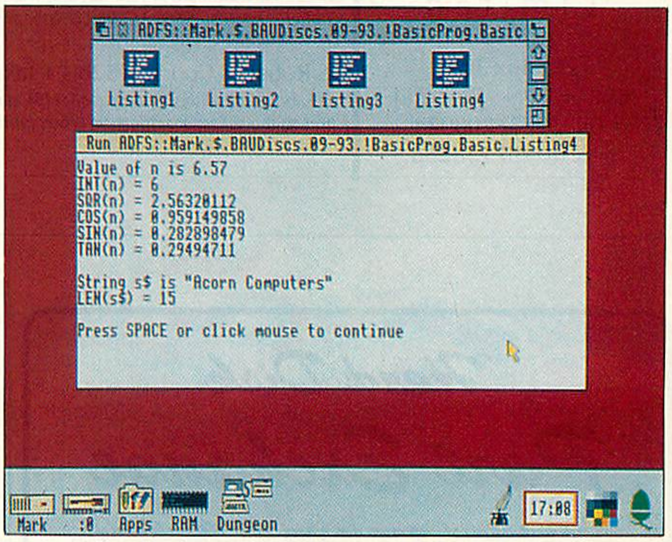
Now whenever we use the name number_of_eggs in our program, 7 will be substituted.

Why call them variables? It's because we can change the value associated with any variable at any time. If, later in our program, we have the line:

```
number_of_eggs=10
```

then the value for number_of_eggs will be 10 from that point on.

Try typing in Listing 1, which simply prints out two values when run. In line 4 the variable number_of_eggs is set to 7, printed out in line 5 using the PRINT command, which will be described in full in a later article. In line 6 number_of_eggs is set to 10, which is printed out in line 7.




Running Listing 4 to demonstrate various variable functions

Line 8 terminates the program, and line 3 is our standard error handler, described last month.

## Variable types

There are three important types of variable: *integer* variables, which can only have whole number values; *floating point* variables, which can have any number values; and *string* variables, which have strings of characters as values.

You tell the computer which type you are defining by the last character you choose for the variable name. A name by itself, such as number_of_eggs, denotes a floating point; a name ending in a per cent (number_of_eggs%) denotes an integer; and a name ending in a dollar (number_of_eggs$) denotes a string. Don't worry about string variables: we'll look at them later.

In Listing 1 we used a name without a per cent character, so the variable number_of_eggs is a floating point variable. We could give the variable a non-integer value, such as 3.5, by altering one of the assignment statements (lines 4 and 6) to `number_of_eggs=3.5` or similar. If we wanted to make sure the number of eggs was always a whole number (which makes sense) we could add a per cent to the variable name. This makes no difference in this example, but the following shows why you should make sure to use the correct variable.

The real power of variables is apparent when you consider *expressions*. An expression is the name given to something which can be evaluated to produce a value. The following are expressions: 1+2 and number_of_eggs+1, as they can

## Numeric operators

| Op | Function |
|---|---|
| + | Addition<br>eg number_of_eggs+3 |
| - | Subtraction<br>eg number_of_eggs-6 |
| * | Multiplication<br>eg number_of_eggs*48 |
| / | Division<br>eg number_of_eggs/2 |
| ( ) | Brackets<br>eg (number_of_eggs+1)/10 |
| ^ | Raise to the power<br>eg number_of_eggs^2 |
| DIV | Integer division<br>eg number_of_eggs DIV 2 |
| MOD | Integer remainder<br>eg number_of_eggs MOD 2 |

## Numerical functions

| Operator | Description |
|---|---|
| ABS(n) | Makes n positive, so ABS(-65) evaluates to 65 |
| INT(n) | Rounds n down to an integer, so INT(6.7) evaluates to 6 |
| SQR(n) | Evaluates the square root of n, so SQR(9) evaluates to 3 |
| COS(n) | Evaluates the cosine of n (n is in radians) |
| SIN(n) | Evaluates the sine of n (n is in radians) |
| TAN(n) | Evaluates the tangent of n (n is in radians) |
| ACS(n) | Evaluates the arc-cosine of n (n is in radians) |
| ASN(n) | Evaluates the arc-sine of n (n is in radians) |
| ATN(n) | Evaluates the arc-tangent of n (n is in radians) |

## String functions

| Op | Description |
|---|---|
| LEN(s$) | Evaluates to the length of the string s$ – the number of chaacters in the string |
| STR$(n) | Converts the number n into a string, so STR$(456) evaluates to "456" (a string) |

be evaluated; the first to 3, and the second to the value of the variable number_of_eggs plus 1.

Variables can be assigned values not only by putting `number_of_eggs=7` or whatever, but by putting any expression on the right-hand side of the equals sign. So the *syntax* for the assignment of a variable (in other words, the standard way of laying out the statement) is:

```
variable_name=expression
```

Try entering and running Listing 2. This makes number_of_eggs% seven, and defines more_eggs% to be the value of the expression number_of_eggs%+1. This evaluates to 8, No problems there, but try changing line 6 to:

```
more_eggs%=number_of_eggs%-
+1.5
```

The value of more_eggs% doesn't change, although we'd expect it to be 8.5. The reason is that more_eggs% is an integer variable, not allowed to contain a non-integer number. In this case, the value of 8.5 is rounded down to 8 when assigned to more_eggs%.

Now remove all the percentages, and run again. The expected value of 8.5 is shown. The moral is simple: only use integer variables when you need to, but do use them if you know a variable will never have a fractional value.

Expressions can be far more complicated than simple addition. Table 1 shows the more common numeric operators, though I have left out a lot of the more technical ones to keep things simple.

Addition, subtraction, multiplication and division are all pretty obvious: the only thing to notice is that an asterisk is used as a multiplication sign. Brackets allow otherwise ambiguous expressions to be evaluated, such as 1+1/2, which could be evaluated to 1.5 or 1, depending on how you read it. Basic has a built-in method of avoiding this problem, 'operator precedence', but I reckon using brackets removes ambiguity and means you don't have to remember the rules to understand the expression. Stick to (1+1)/2 or 1+(1/2), rather than 1+1/2.

The raise to the power operator is also pretty easy: 5^2 means five-to-the-power-of-two, or 25. Finally, the integer operators. DIV is essentially the same as / except the result is rounded down to the nearest integer, and MOD gives the remainder from the division. 5 DIV 2 evaluates to 2 (as 5/2 is 2.5 which rounds down to 2), and 5 MOD 2 evaluates to 1 (as the remainder when 5 is divided by 2 is 1).

### String variables

Before discussing variables and their uses further, we have to look at string variables, which have names like number_of_eggs$. A string is a string of characters, like "Abcdef" or "Welcome to our world!". Notice the string is in double quotation marks; this is how a string is denoted.

To assign a value to a string variable, you still use the same syntax as for the numerical variables, in other words:

```
variable_name=expression
```

This time the variable name ends in a dollar, so an example of string assignment would be:

```
name$="Mark Moxon"
```

Try entering Listing 3, a quick demonstration of assigning two string variables and printing them out one after the other. The strings are assigned in lines 4 and 5, and are printed out by the PRINT commands in lines 6 and 7. You can include a quotation mark in a string by putting two quotes next to each other; the quotes around the word "Acorn" are entered in the program using this method.

### Variables

Basic has a large number of built-in functions for manipulating variables, these can be used in expressions to calculate various mathematical values. Table 2 shows a collection of mathematical functions which can be used on numerical (integer or floating point) variables: Table 3 shows some string functions. Using these, expressions such as `(COS(angle)*PI)/ABS(sign))` can be constructed for your amusement.

Listing 4 shows these in action, and should help explain how they work. Type it in and have a go.

Next month I'll take a look at the functions available for variable manipulation in more detail, so don't worry if the tables don't instantly make sense: they will then.

## Listing 1

```
REM >Listing1¶
:¶
ON ERROR REPORT:PRINT " at
line ";ERL/10:END¶
number_of_eggs=7¶
PRINT "The value of number
_of_eggs is";number_of_egg
s¶
number_of_eggs=10¶
PRINT "The value of number
_of_eggs is ;number_of_egg
s¶
END¶
```

## Listing 2

```
REM >Listing2¶
:¶
ON ERROR REPORT:PRINT " at
line ";ERL/10:END¶
number_of_eggs%=7¶
PRINT "The value of number
_of_eggs% is ;number_of_eg
gs%¶
more_eggs%=number_of_eggs%
+1¶
PRINT "The value of more_e
ggs% is ";more_eggs%¶
END¶
```

## Listing 3

```
REM >Listing3¶
:¶
ON ERROR REPORT:PRINT " at
line ";ERL/10:END¶
first_string$="Hello. I am
an"¶
second_string$="""Acorn""
Computer."¶
PRINT first_string$¶
PRINT second_string$¶
END¶
```

## Listing 4

```
REM >Listing4¶
:¶
ON ERROR REPORT:PRINT " at
line ";ERL/10:END¶
n=6.57¶
s$="Acorn Computers"¶
PRINT "Value of n is ";n¶
PRINT "INT(n) = ";INT(n)¶
PRINT "SQR(n) = ";SQR(n)¶
PRINT "COS(n) = ";COS(n)¶
PRINT "SIN(n) = ";SIN(n)¶
PRINT "TAN(n) = ";TAN(n)¶
PRINT¶
PRINT "String s$ is """;s
$;""""¶
PRINT "LEN(s$) = ";LEN(s$
)¶
END¶
```

Got a problem? Drop us a line and we'll do our best to sort it out. Plus tips from Acorn's customer hotline

# QUESTIONS & ANSWERS

**Q** I have an A5000 with Risc OS 3.10. I have been trying to alter the colour of the pointer, backdrop and the iconbar without altering the palette. Is there any way I could alter any of them using another method?

**Chris Davis**
**(No address supplied)**

**A** **Altering the colour of the pointer is not too tricky, although it's a little long-winded. First, you need to get hold of the sprite for the printer, which is held in the sprite file *Resources:$. Resources.Wimp.Sprites*. Save the two sprites *ptr_default* and *ptr_double* into a separate file on disc, which we will call *Pointers*.**

**Next, load the sprite file into *Paint*, and give each of the two sprites a palette. You can now alter the definitions for colours one and two; these correspond to the outside and inside colours of the pointer respectively; they will be dark blue and light blue in the default.**

**The next step is to create an Obey file, using *Edit*, containing the following line:**

```
IconSprites <Obey$Dir>.Pointers
```

**Save this Obey file in the same directory as the *Pointers* file, and double-click on it to install your new coloured pointer.**

**If you have high-definition sprites loaded from *SetIcons*, then edit the sprite definitions in the file *!SetIcons.22Sprites*, rather than the set built-in to Rom. You can run the Obey file from your boot sequence (using a line like `Run ADFS::Mark.$.Library.LoadPoint`).**

**Changing the colour of the backdrop is not simple at all, but a clever method was described in *INFO in April.**

**Changing the colour of your iconbar is not difficult if you have a copy of the template editor *FormEd* (or equivalent). Yet again we have to turn to the resources in Risc OS Roms, this time to the template file *Resources:$. Resources.Wimp.Templates*.**

**Copy this file to disc, and load it into *FormEd*. One of the window definitions is called iconbar, which is, not surprisingly, the iconbar window definition. Change the colour of the bar using the Colours submenu (you want to change the work background), and save the file back again.**

**Finally, you need to rehash your desktop boot file, to ensure that the new template file is used by the Wimp manager before the desktop itself is initialised. First, press F12 and type the following:**

```
Configure Language 19
```

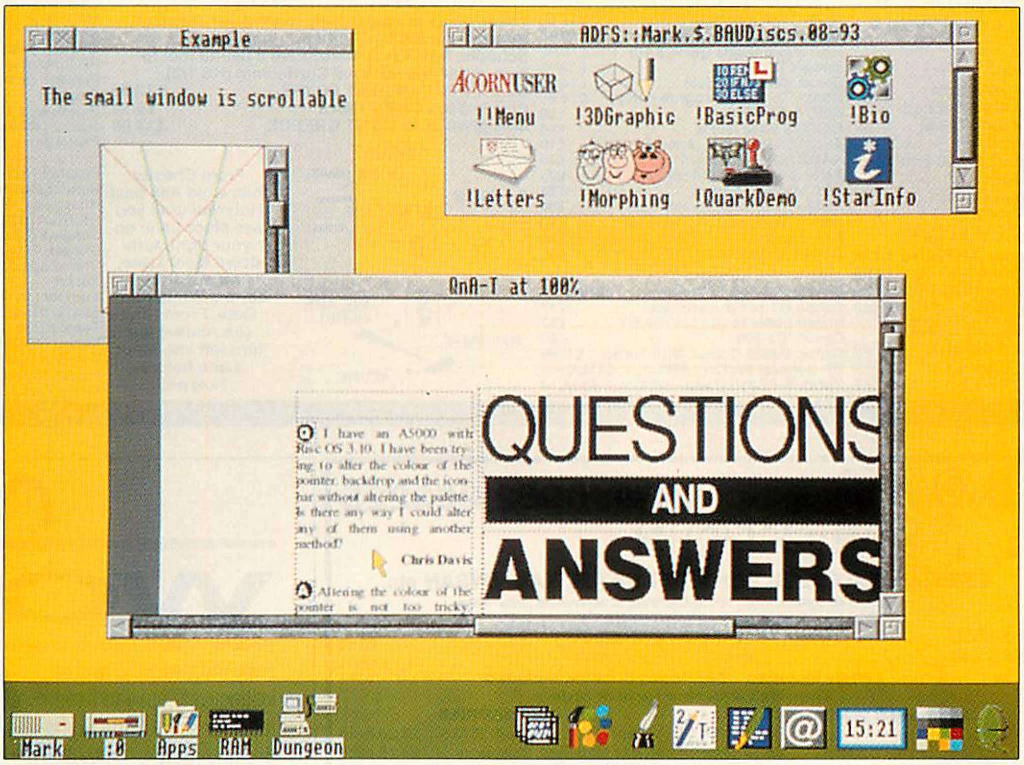
**to set the start-up language to Basic. Next, rename your *!Boot* file to *!Boot2* (or save a desktop boot file as *!Boot2* if you don't already have one).**

**Finally, create an Obey file in your root directory containing these three lines:**

```
Set WindowManager$Path ADFS::Mark.$.Library.Wimp.,<WindowManager$Path>
RmReInit WindowManager
Run ADFS::Mark.$.!Boot2
```

**and save this as *!Boot*. Note that in this example, the template file was saved in the directory *$.Library.Wimp*.**

**There is one point to note. Applications which use the iconbar often assume the bar is coloured with desktop colour two, so if there is any text under the icon (as with the device icons), then the text will still be printed on a grey background.**



Now you too can have a disgusting desktop like this

**Q** Since upgrading my Archimedes to Risc OS 3, I've experienced a couple of very strange problems.

The first is an error which is displayed on the initial black screen when the computer starts up, before the desktop welcome sign. Below the display of how much Ram I have appears the message Drive Empty. One solution I have found is to place a floppy disc in the drive when I turn on the

system, but this is hardly an ideal situation, is it?

My second problem is more of a vanishing act. Under Risc OS 2, my hard disc displayed approximately 50Mb in size when I chose the Free option from the disc menu. However. since upgrading to Risc OS 3, it now only shows 47Mb in the multi-tasking free space display. What on earth has happened to my missing 3Mb?

**Steve Fiet**
**Leslie, Fife**

**(A) The error you are getting on start-up is easy to explain. There is a configuration option called Dir which governs whether the computer mounts the current drive when the machine is turned on, or ignores the drive.**

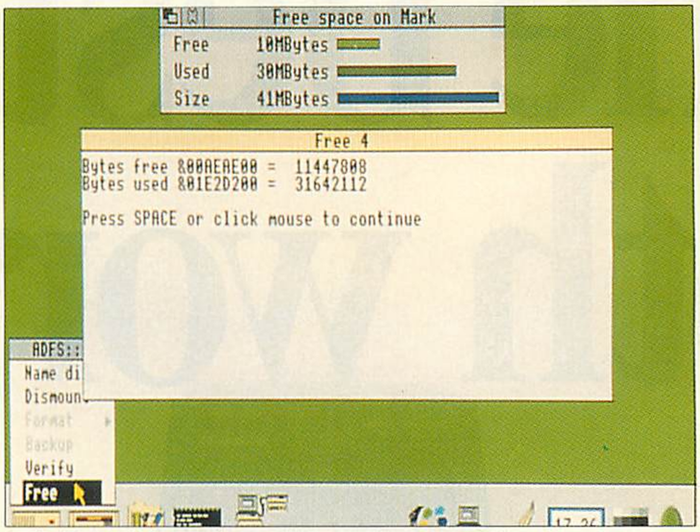
**You have got your machine configured to mount the current drive. To change this, press F12 and type `Configure NoDir`. You will now find that switching your machine on will no longer require a disc to be present.**

**Your second problem is somewhat easier to explain: don't worry, you haven't lost any disc space.**

**On Risc OS 2, the free space display showed the amount of space used and the amount free in bytes, but the new multi-tasking window shows the amounts that you have in megabytes.**

**Remember that 1Mb is in fact 1024K, not 1000K, and 1K is 1024 bytes, so a 47Mb disc has 47 x 1024 x 1024 = 49283072 bytes free, not 47 million. So on Risc OS 2, the display would have been very near to 50 million.**

**All that is happening on Risc OS 3 is that the computer is telling you that you actually have a 47Mb drive, not a 50Mb drive as you may have thought you had.**



Looks like a whole megabyte of disc space has gone missing – but it hasn't

(Q) I am writing an application and want it to load a data file in response to a double-click on that file.

At the moment, if you double-click on a file the application loads, but not the file. Firstly, how do I get the application to load the file automatically. Secondly, how do I then prevent the application from loading a new copy of itself every time I double-click on a relevant file.

**Paul Fernando**
**Guernsey**

**(A) Bit of a technical one this. First, there must be two lines in your *!Run* file along the lines of the following:**

```
Set Alias@RunType_XXX Run <
App$Dir>.!Run %%*0
Run <App$Dir>.!RunImage %*0
```

**The %%*0 and %*0 sequences are the vital parts: they are substituted for the filename to be loaded. Note that XXX is the hexadecimal filetype for the file you wish to load.**

**The next step is to put the following lines at the start of your main *!RunImage* program:**

```
SYS "OS_GetEnv" TO env$
IF INSTR(env$,"-quit") THEN
 I%=INSTR(env$,"""")
 I%=INSTR(env$,"""",I%+1)
 REPEAT
  I%+=1
 UNTIL MID$(env$,I%,1)<>" "
 env$=MID$(env$,I%)
```

**This sets the variable env$ to the filename of the file which has to be loaded by dissecting the command line which is passed to Basic.**

## Customer hotline

**Each month in Acorn User, Alan Glover offers you the latest support and advice from the Acorn customer service department**

This month's column concentrates on the Acorn PC Card, with various hints and tips, plus details of a software upgrade.

### SOFTWARE UPGRADE

The revised software will be available from 1 September 1993. You can obtain it free by returning the original Acorn PC Card Software Disc, and Windows Driver where supplied, along with your name and address, in an envelope clearly marked 'PC Card Upgrade', to:

Customer Services
Acorn Computers Limited
Fulbourn Road
Cherry Hinton
Cambridge
CB1 4JN

### RUNNING DOS APPLICATIONS

There is a problem with the current version of the software which, may result in loss of data. However, this problem is unlikely to be encountered in normal use and can be avoided.

When running Windows in enhanced (386enh) mode, don't attempt to run Dos applications from within Windows itself. This is not supported and causes Windows to crash, possibly resulting in data loss from your hard disc.

Shut down Windows and return to the Dos prompt before starting up Dos applications. If you need to run Dos programs from within Windows, start Windows in standard mode, using the command WIN/s. Certain benchmarks, such as those provided by Windows User magazine, attempt to run DOS applications from within Windows. Ensure these are only run from within Windows when in standard mode.

### USING DOS HARD DISC PARTITIONS GREATER THAN 32MB

DosFS, an integral part of Risc OS 3, does not support Dos hard disc partitions larger than 32Mb. If you create a Dos partition which exceeds this size, it will not be possible to access it from the Risc OS desktop.

Dos partitions greater than 32Mb can only be accessed from within the PC Card environment. Transfer files between a Dos partition greater than 32Mb and a Risc OS-based filing system via floppy disc(s) or another Dos partition of 32Mb or less.

### WINDOWS 3 AND MEMORYMAX

As supplied, by default, DR-Dos provides access to additional memory via the use of MemoryMAX (MEMMAX) software. During the boot sequence you will be prompted to load this software by the command:

Load MemoryMAX software (y/n)

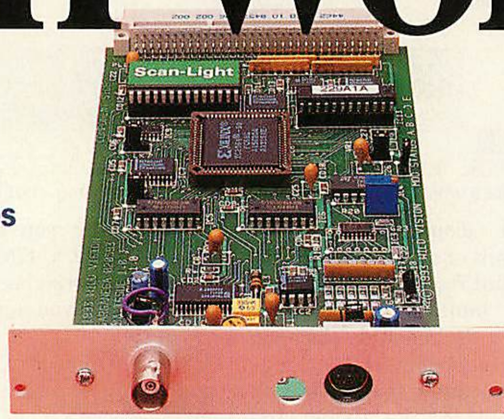
Replying "n" to this prompt will allow Windows to be started in enhanced mode, by entering the command:

WIN

If you wish to run Windows with the MemoryMAX software enabled, you should ensure that Windows is started in standard mode, by entering the command:

WIN /s

# The best of both worlds




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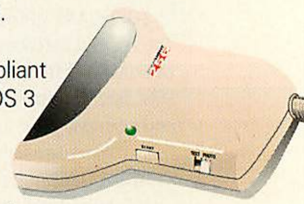



### Hardware

- Single width expansion board suitable for A300, 400, 500 and A5000 computers.
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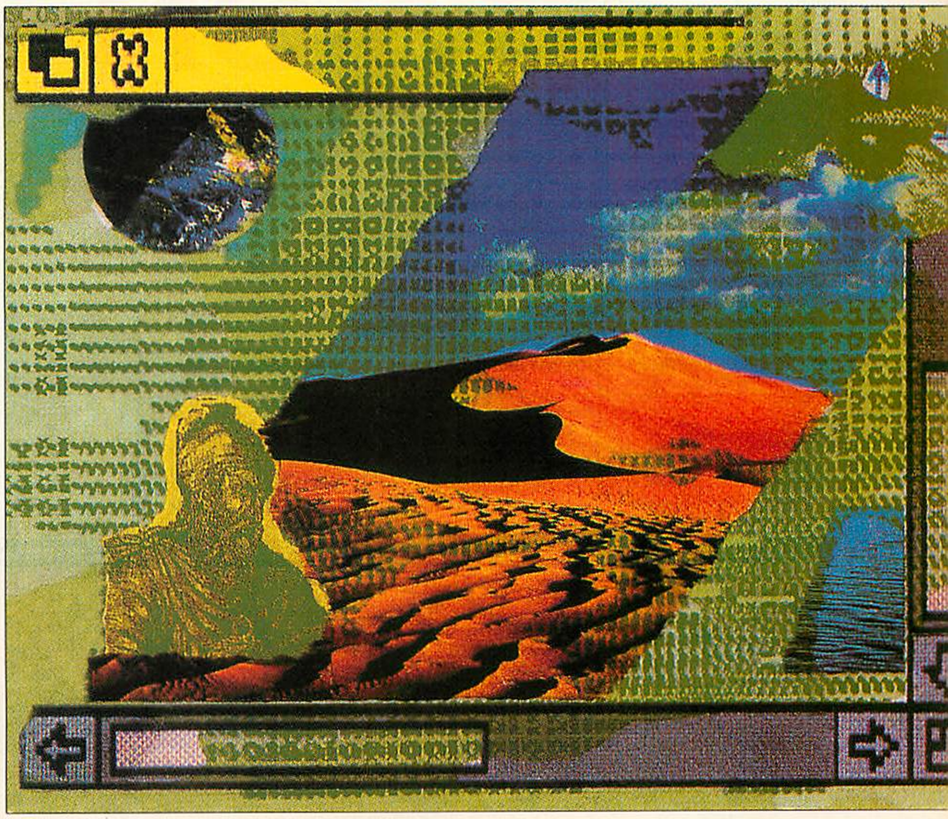
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# A HEAVY READ

When Acorn decided it was time for the Risc OS 3 Programmer's Reference Manual, it didn't hold back on detail... or size. Dave Lawrence found it well worth the weight

What has 3220 pages, costs one hundred pounds and weighs fifteen pounds? The *Risc OS 3 Programmer's Reference Manual*, that's what.

Ever since the announcement of Risc OS 3, programming types have been screaming out for documentation on its features. Incomplete (and sometimes inaccurate) photocopies of development versions have been available for some time to ISVs (Independent Software Vendors), but the general public has been in the dark – until now.



## Contents

Everything you could want to know about the Risc OS is here. Everything, that is, except the *Style Guide*, still being worked on but to be sent to all registered owners when ready.

The kernel, I/O, filing systems, networking, desktop, printing, sound and hardware are all covered. And, at last, C library calls are documented. Machine-specific extensions, like the *Joystick* module (on the A3010) are also explained here.

If you've moved from an eight-bit machine and are used to the *Advanced User Guide*, the important thing to note is that this is a manual for Risc OS 3, not for the machines, so you'll find no detailed memory maps of OS workspace or odd calls directly into the Rom. It is a programmer's, not a hacker's, manual.

## Presentation

The first thing you notice is the sheer size of the manual. Aside from the aforementioned weight and page count, there are four volumes plus an index, each over an inch thick. Like the Risc OS 2 manual, the books are perfect bound and so only stay open after about page 100. Spiral binding would make a big difference.

Flicking through reveals a clear layout, with lots of white space, making it very easy to read. Small grey edging marks on sides of pages delineate major sections, like *The Desktop*. The top right-hand corners of right-hand pages contain the sub-section (*Program Environment*, *ColourTrans*) and top left-hand corners of left-hand pages contain the name of the call or command (OS_RemoveCallBack, ColourTrans_SetGCOL).

This could have been better arranged: a call described on a right-hand page could have had a page header entry.

Each volume starts with a contents page for the whole manual, but the index is separate. In addition to the complete subject list, the slim index tome details all star commands, OS_Bytes, OS_Words and SWIs and service calls, both numerically and alphabetically.

My think-of-five-things-and-look-them-up test worked. There may well be omissions within the books, but I certainly didn't come across them.

Within the volumes, each section contains many more cross references than the OS 2 manual. In a SWI call, the 'related SWIs' section contains page references – very useful. Strangely the 'related commands' section has no references.

## Conclusion

I've been 'lucky' enough to have a set of the pre-production photocopies for a while, and I'll miss the spiral binding and six-volume format. Acorn has deliberately pitched this at this price and informs me a sub-£100 price tag is very desirable. This may seem a lot but for aspiring programmers they are essential and represent amazing value for money.

*Acorn Computers is on (0223) 254254*

## Afterthought...

With manuals approaching this sort of size, the value of paper and ink rapidly diminishes. It becomes inevitable that your whole desk space is taken up with 1000-page volumes with pens sticking out and marking vital pages.

The release of a CD-Rom version of the Risc OS 3 PRMs is rumoured to be imminent, and although an electronic manual has its own problems – ideally you need a second machine on which to run the retrieval program, and a suitable huge screen mode to view a page full of information – perhaps this is really the way to go. Time will tell.

# A new dimension

**This month, a little refinement of our BAU3D module. If you'd like to skip the maths, the latest copy of BAU3D with source is on the subscriber's disc**

One thing which our simple 3D module did not cater for in its original incarnation was the idea of hidden surface removal. Although objects which lay wholly outside the 'view pyramid' were instantly discarded, those surfaces which faced away from us and were clearly invisible were still calculated and plotted. Naturally the sorting of surfaces meant they disappeared behind the visible faces in front of them, so that the only effect was to slow down the rendering.

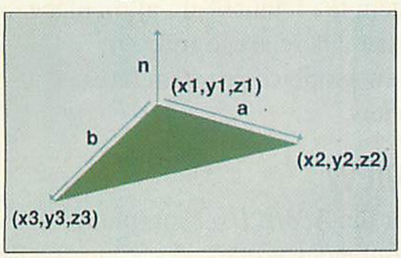



Figure 1

Of course, we can only remove hidden surfaces of 'closed' objects – those without holes. Imagine a simple square pillar box with a slot for letters. Even the rear surfaces would still always have to be plotted since we would be able to see one or more of them through the slot.

Many objects (like last month's cathedral) are 'closed' (hole-less) though. By marking them such (with the new keyword 'closed') in the file, a renderer can ignore hidden surfaces. With the side benefit of fewer surfaces to sort, the time saving can be more than 50 per cent.

But how do you tell whether a surface pointing away from you? The method requires the use of 'normals', 'scalar products' and 'vector products'. For those of you who are familiar with these everyday concepts, here's a quick guide to the method.

Consider the triangle in Figure 1. We first must calculate the normal to this face (any vector perpendicular to it). The normal is calculated by taking two (non-parallel) vectors that lie on the face. Two suitable vectors are *a* and *b*.

The geometrical entity called the vector product of *a* and *b* (denoted as $a \times b$) is actually a vector that is normal to *a* and *b*. We can then make use of the scalar product, which provides us with the way of finding the angle between this normal and our line of sight. If this is more than +90° or less than -90° the surface is hidden and can be ignored.

## Better sorting

The simple *BAU3D* module broke the scene down into surfaces and sorted them according to mean *z* co-ordinate. This is time consuming, making no use of the fact that surfaces are grouped together to form larger objects which may themselves be grouped. Also, it got the rendering wrong from time to time, since the mean *z* coordinate is no guarantee of getting the right order. Look at Figure 2, where surface *A*'s mean *z* is in front of surface *B*. Clearly, surface *A* should be plotted first. How can we get around this problem and speed up our rendering too?

The answer lies again with a little co-ordinate geometry. Our rendering algorithm is changed as follows.

**1** Go through the list of objects and sort them. If the *z*-extents of two objects do not overlap (one is clearly behind the other) there can be no doubt as to the order in which to plot them. If there is an overlap proceed to step 2.

**2** Consider the bounding cubes of the two objects, rotated according to their position and our point of view. If they overlap, if any one corner of the bounding cube of an object lies within the bounding cube of another, we need to break the objects down into their component parts. Having done so, go back to step 1 and try again. If the cubes are separate, go on to step 3.

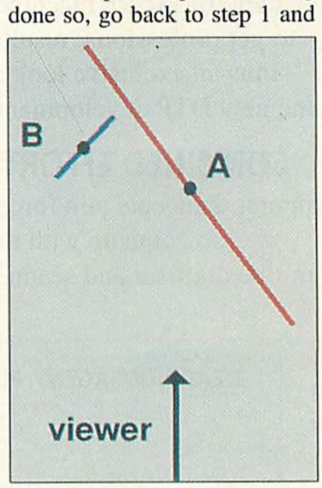



Figure 2

**3** Look at Figure 3. Although the house *A* and cathedral *B* do not overlap, it wouldn't be obvious, from looking at their mean *z* co-ordinates, which to plot first. Thus we first look at *A* and consider the point of its bounding cube furthest from us, at the corner of three surfaces of the bounding cube. What we need to do is to find whether the *B* lies wholly behind any of these three surfaces. If it does,

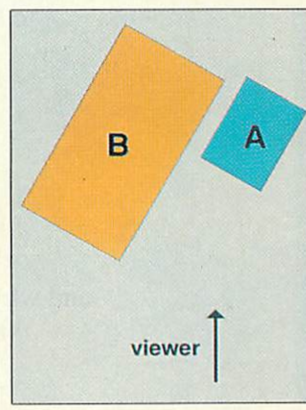



Figure 3

we plot it first. If not, we repeat the same check but the other way round – seeing if *A* lies behind any of the three rearmost surfaces of the bounding cube of *B*. If the test works out at all, we know the order in which to plot. If not, our best strategy is to break down the objects into their component parts and try again.

To see whether an object lies behind a surface, we need to find the equation of the plane through that surface. Again, we find a normal to that surface and from it we deduce an equation from the plane. Now we feed the eight co-ordinates of the bounding cube of the other object into the equation of the plane. If the result is negative (or positive, depending on how you have described your world) we know the object lies behind the surface.

This algorithm is applied recursively to each group of objects sorted. So, a surface or object is only compared with others local to it not with those clearly in front or behind.

NEXT

# MONTH

BBC ACORN USER

## SPECIAL DTP ISSUE

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### THE FLOATING POINT ACCELERATOR

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### PRO ARTISAN 2 REVIEWED

The manual is written; the features are all in place and at last, ProArtisan 2 is ready to roll. Find out how the new graphics program fares in next month's review

### MORPHING REVIEW

Just one month after the *Acorn User* morphing program, another contender was released in the form of *Morpheus*. Next month we take a look at the first commercial morphing program

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# Not so baby Bio

The ever-expanding Bio gains a short module to protect your files, another quickie to wipe them again, and one to convert text files to Draw files. Dave Lawrence fills you in

Due to the popularity of our *Bio* application, we are once again able to bring you a selection of extension modules. If you've never heard of *Bio* and would like to find out more, look at the February, April and August issues.

Due to a lack of yellow pages listing space, we will no longer be printing out the reams and reams of data needed to generate sprite files for *Bio* modules. Instead we hope you will be able to use your own artistic skills to come up with sprites of your own. Instructions can be found in the yellow pages, and the original sprites will, of course, be provided on the subscriber's disc. Any templates required will still be listed.

## Filelock

First a short, simple, but useful module from Duncan Roberts, consisting of 20 lines, most of which are comments. Dragging a file to the *FileLock* icon will set its access permissions to LWR, meaning it can be written to and read but not deleted. Obviously this can be done from the Filer menu, but two submenus need to be traversed to find the Protected option. A results window displays a quick confirmation message along the lines of 'File X locked', to let you know what's going on. Ideally you should be able to drag a selection and lock them all, but that's not Duncan's fault – we need to build multiple file loads into *Bio* itself.

Duncan's module inspired the next shortie: *ForceWipe*. This performs the opposite of *FileLock*. Any object (file or directory) can be dragged to the *ForceWipe* icon and irrevocably removed from your disc. I don't like to leave the Force option set from the filer Options menu and with this utility you don't need to set it.

Risc OS 3 owners have a little value added in that the Filer Action window is used, so it can carry on in the background. We hope to cover this in *INFO. Very briefly, a Filer_Action task is started; the name of directory containing the object to be deleted and the object itself are communicated to the task with a couple of SWI calls; then a delete object command is sent with another SWI. The global variable version% contains the version number of the operating system to check if Risc OS 3 is installed first. If not, the appropriate wipe is executed via OS_CLI

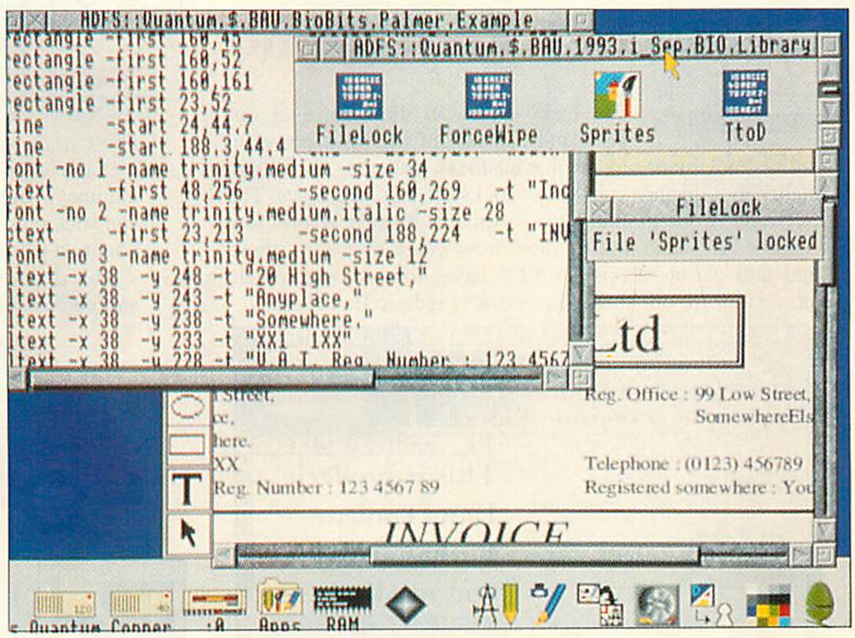
## TtoD

Gary Palmer's *TtoD* module provides a pre-processor that converts a series of commands in a text file into a diagram in a *Draw* file. This enables precise drawings to be created without any need to muck around with the innards of a *Draw* file. It becomes very easy to write other programs that produce 'draw description files' as output. A summary of commands available is shown in the table in the yellow pages.

The code is written such that there are no 'start' and 'stop' points for non-grouped objects (not including commands in the 'path' command). Hence the two co-ordinates ('first' and 'second') are sorted to ensure output conforms to the *Draw* file standard. This was initially implemented in case the user got the lower-left and upper-right co-ordinates the wrong way round but, Gary decided, why make the user do something computers are good at, namely comparing two sets of numbers?

To conform to the Acorn *Draw* file standard, the colour identifiers are given in hexadecimal. So, for example, if you need to do colour, use &FF0000 to get saturated blue. '-line' stands for the colour of the line, and '-fill' stands for the colour the object is filled with.

It would be easy to extend the program to '#include' a file defining commonly-used colours, so that they would not have to be specified as RGB quantities every time. Gary has not added colour selection to the text commands in the module, as that would serve to further complicate commands.




**The *TtoD* module in action, taking a text file from *Edit* and producing a neat invoice in *Draw*. An example program, that produces a text file suitable for processing by the *TtoD* module, will appear in a future *Bio* column.**

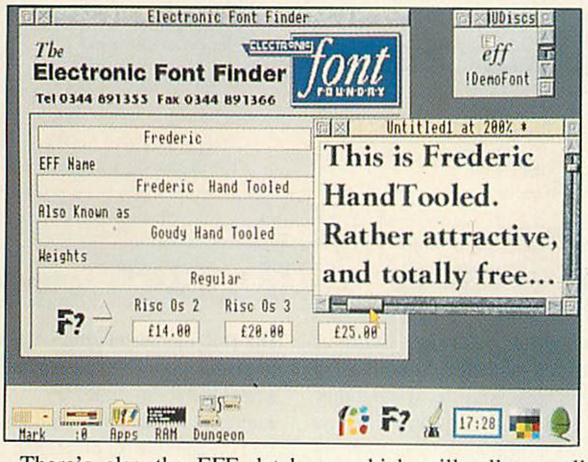
**The three *Bio* sprites on the iconbar above are (left to right) *TtoD*, *ForceWipe* and *FileLock*. You might find it useful to base your own sprite file on these designs; for the uninitiated, the *ForceWipe* sprite is in fact a plughole.**

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## Free! EFF Font Demo

We lucky Risc OS users have at our beck and call one of the most powerful outline font managers in the business, and the Arc's high quality font display knocks the socks off PCs and Macs. The Electronic Font Foundry has been the biggest Acorn font supplier for years, and to show how much they care, those kind and caring people at EFF have donated a complete outline font for our subscriber's disc: Frederic.HandTooled.




There's also the EFF database, which will tell you all about EFF's range of fully hinted and scaffolded fonts, and there are a couple of *Draw* files showing off other fonts and utilities for your delectation.

## Grapevine Files

*The Grapevine* is the student newspaper of Harlington Upper School, and it is entirely produced using *Ovation* on Acorn computers. Last month we investigated how a newspaper of such a high standard could be produced using the same technology that people have in their homes, and on the disc this month are the *Ovation* files which make up the magazine.

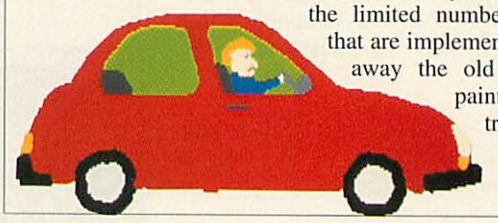
The files are arranged in stages, going from a blank page all the way to a complete page with headlines, articles and text styles. There is also the complete Ovation file for the May 1993 issue, so you can see exactly how the whole magazine is laid out from end to end.

As in all great marketing strategies, read the article, load the files, then go and try it for yourselves.

## Kidpix Demo

ESM's *KidPix* is great fun: you certainly don't have to be an accomplished artist to produce fantastic pictures of box-like houses with smoke curling out of the chimney. And there's lots of little clip art characters which you can stick onto your picture, like dinosaurs, palm trees and other common garden accessories.

This demo version will let you explore the world of *KidPix*, and you can produce some excellent effects yourself, even with the limited number of features that are implemented. So chuck away the old crayons and paint: this is the true future of fridge decoration.



## Basic

Variables, variables, variables... rolls off the tongue rather less smoothly than one would hope, but this *is* a programing tutorial we're talking about.

Yup, this month it's the thorny concept of the variable that gets star treatment in our new(ish) Basic programming series. And, of course, all of the listings from the article are present on the disc in all their glory.

On the other hand, bear in mind that typing in programs is a very good way to learn how to program. So no cheating. Don't use the programs from the disc: type them in yourself. The only reason we're putting these listings on the disc is that the icon is really rather neat.

You have been warned.

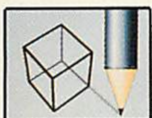
## *INFO

The theme for *INFO definitely seems to be graphics. Graphical neural networks, graphical creepers, a graphical underground map. Our fast sprite rotation routine produce some of the strangest effects this side of the Great Barrier Reef, And we delve into the Shared C Library.



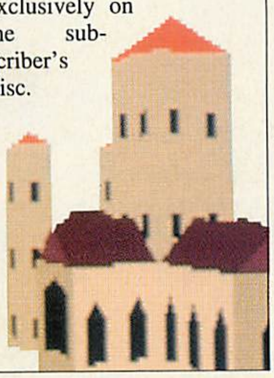
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## 3D

It's all go down at the 3D Graphics creativity department. Hidden surface removal is the main theme for this month. As our 3D world gets more and more realistic, the listings inevitably get longer, so they're now exclusively on the subscriber's disc.

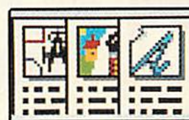




## Bio

It's always nice to see your babies growing up, but at the rate Bio is expanding, you start to wonder at it all. Yet again we've got some top class modules for you to add. *ForceWipe* and *FileLock* make file deletion and locking as simple as is humanly possible; all you have to do is drag your files to Bio to remove them or protect them.

Or, with *TtoD*, you can create *Draw* diagrams from simple text files. Now you can produce accurate circles and lines, without using your mouse.

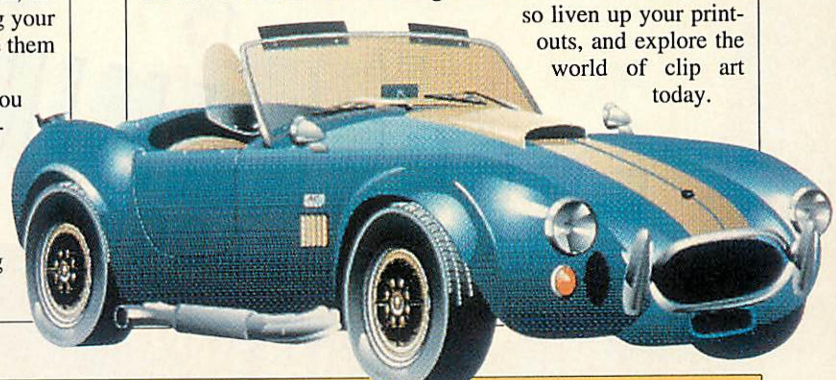


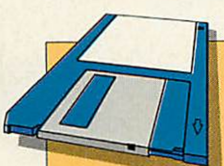
## Clip Art List

Clip art is a fantastic resource, and it can really add sparkle to the presentation and layout of DTP work. On the other hand, there is so much of it about, that it's very much a case of dabbling around in the clip art market, trying to find suitable pictures for your work.

We've compiled a list of all the major clip art suppliers in the Acorn scene, so you can narrow down the choice.

And don't forget that on top of the commercial companies which appear in our list, there are numerous public domain libaries which can supply a nearly limitless range of clip art: the choice can be bewildering. But we've done the legwork so liven up your printouts, and explore the world of clip art today.





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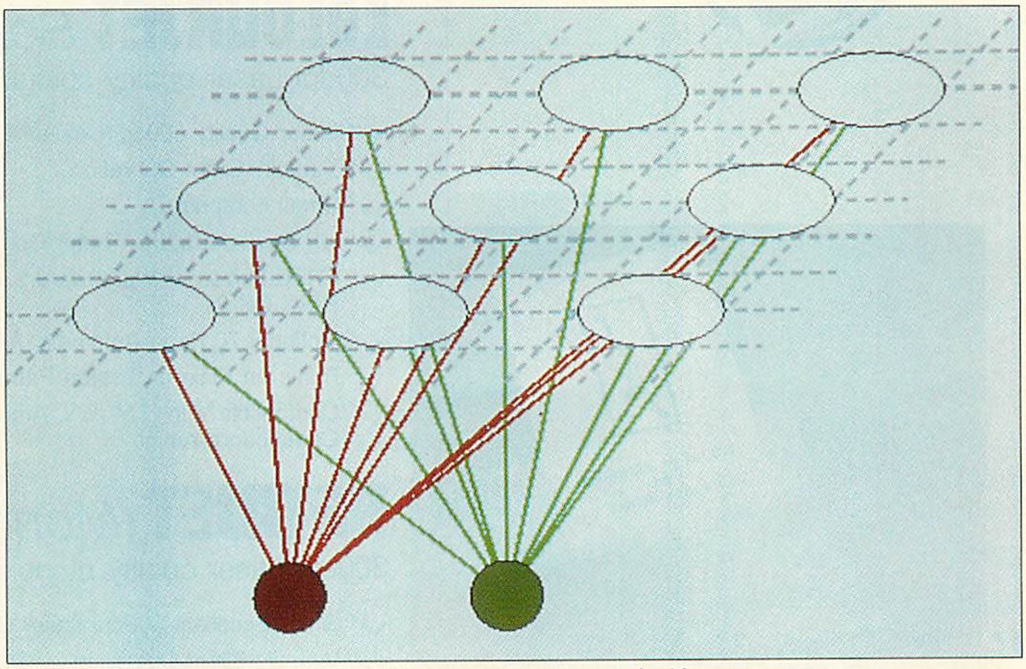
# *INFO

Dave Lawrence and Dave Acton present their monthly mix of programs, for all Acorn users

STAR PROGRAM

## NET RESULT

**Program: ElasticNet**
**Description: Graphical Neural Network**
**Author: Mike Tipping**
**Machine: 32-bit**



Schematic of a Kohonen map. Don't worry, we can't pronounce it properly either

*ElasticNet* is a graphical simulation of a type of artificial, self-organising neural network known as the elastic net, or Kohonen map after its originator. Schematically, a typical network is shown on the right. This example consists of two input neurons, each linked by a weighted connection to every neuron in a two-dimensional layer above.

When trained according to Kohonen's algorithm, the weights are adjusted such that the two-dimensional layer of neurons organises itself to respond to particular inputs in a spatially-ordered manner. This self-organisation is illustrated by the program, which implements Kohonen's algorithm as detailed below.

The two weight connections for each neuron are initialised to random values between 0.4 and 0.6. During each cycle of the algorithm, the two input neurons are set to random values between 0 and 1. These two values can be considered to specify an *x,y* point in a plane, and, in this simulation, on the screen. The neuron whose two weight connections to the inputs (which can also be considered as another *x,y* point) are closest to those input values is considered to be the 'winner'. The winning neuron's two weights are then adjusted to bring them closer to the input values.

The key to the algorithm is that the weights of all the other neurons are likewise adjusted, but by some lesser amount according to how far away from the 'winning' neuron they are – the further away, the smaller the change. In this instance 'closeness' is measured not as the distance between weights on the screen, but in terms of the physical distance between the two neurons in the two-dimensional layer as illustrated in the diagram.

It is this feature of the algorithm that gives the net its apparently elastic behaviour and results, after a number of cycles, in the net organising itself such that its weights mark out a plane covering the domain of the input values (from 0-1 in both axes in this case). This behaviour is particularly interesting as there is significant neurobiological evidence that similar phenomena occur in the human brain itself, particularly in the visual and auditory cortex.

In the latter case, it is observed that neurons which respond to particular frequencies are spatially arranged within the cortex so as to trace an almost logarithmic scale. This arrangement may well have occurred in an analogous manner to that in which the Kohonen map orders itself.

The program draws a 64-neuron, 8 x 8 Kohonen map on screen in the form of a sheet, where each vertex denotes the co-ordinate specified by the weights of a particular neuron, whose position within the physical two-dimensional layer should be clear from the geometry of the sheet itself.

Because the weights are initialised between 0.4 and 0.6, to begin with the net looks very much like a crumpled-up sheet of paper. Over time it should evolve a more uniform 'square' geometry. The net can be seen to be pulled in varying directions, exhibiting the aforementioned elastic effect,




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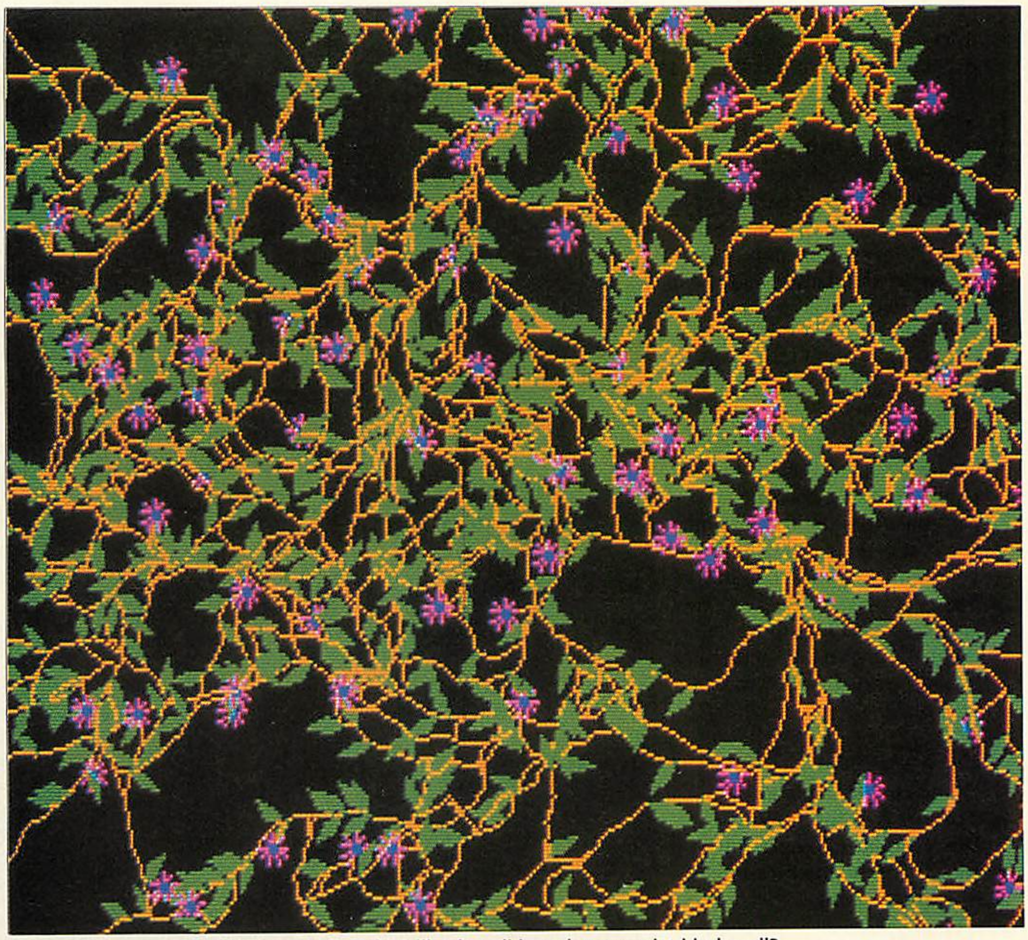
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and it is this effect between neighbouring neurons that causes the sheet to flatten out. However, the net can become twisted, and in some cases may not be able to untwist.

An extra feature of the program (which has no biological relevance) is the ability of the user to override the random input co-ordinates using the mouse. By holding down the Select button, the inputs are set to the co-ordinates of the mouse pointer instead. Try it and see.

Finally, it is worth experimenting with different values of the three variables at the beginning of PROCinitialise in the program. size% defines the width of the x-y array of neurons, and should always be an even number. Taking this down to 4 results in a very quickly evolving net. Increasing it to 16 slows the program considerably.

eta is the training rate. Increasing it causes the weights to take larger steps toward the input values, and results in jerkier motion on screen. Lowering it has the opposite effect. sigma2 is a parameter that effects the elasticity of the net. A larger value will cause neurons further away from the winner to be pulled more. A lower value effectively makes the sheet 'stiffer'.


A beautiful creeper climbing up a wall. Sigh! Still, when did you last see a jet-black wall?

## A POCKETFUL OF VIBES

**Programs: Creeper, Métro, Kalejdo**
**Author: Jan Vibe**

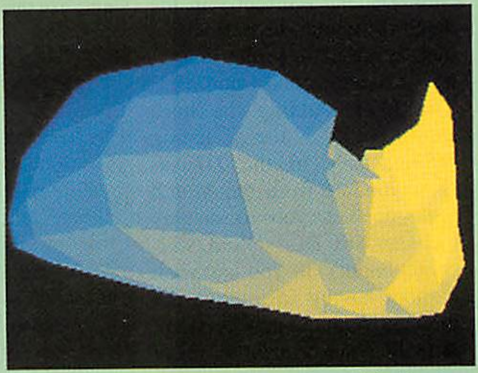
**Description: Assorted Dutch weirdness**
**Machine: 32-bit**

We haven't carried an offering from Jan Vibe for quite a while, so this month we've delved deep into the sack and pulled out three Dutch oddities. And, if that's not enough, there's a one-liner from Jan coming up later.

*Métro* draws a map of the Paris Metro. Well, that's a bit of a fib, I'm sure the French would think it's a map of our illustrious Underground. Actually, everyone in the *INFO office thinks it's really the Moscow tube, so who can tell? Perhaps it's really a plan of those LA sewers where the

## Step-by-step

### JAN VIBE'S KALEJDO



DEF PROCcolours – This sets up a random palette for colours 1 to 15. Colour 0 is left untouched to keep a black background. The components are stored in an array so they can be twiddled later.

DEF PROCscreen – This sets aside a block of memory and initialises it as a sprite area (SpriteOp &109). Next a 320 x 256, Mode 9 sprite is generated and VDU output is redirected to it.

1000 randomly-coloured triangles are plotted in random positions on this sprite, and, finally, VDU output is redirected to the screen. This procedure could have plotted the triangles onto the screen and then grabbed the screen as a sprite, but this method is more elegant.

DEF PROCkalejdo – This is the main routine. Two banks of screen memory are used to ensure smooth animation (update and display). A point (x,y) and a random direction (dx,dy) are chosen and the main loop entered.

This waits for VSYNC, then swaps the displayed and updated screens. x and y are moved by dx and dy and if either co-ordinate goes off the edge of the screen a new dx and dy are chosen. A randomly-chosen colour (RND(15)) then has its r, g and b co-ordinates randomly 'nudged' by a small quantity.

The VDU is then redirected to the 'triangle' sprite and a sprite called 'box' grabbed from the current x, y co-ordinates. This sprite is then used as the basis for the kaleidoscope. The pattern consists of the 'box' sprite reflected four times in each corner of the screen. The procedure PROCplot plots four copies of the sprite at 512 pixel offsets.

This is called to plot the bottom-left-hand elements of each corner. SpriteOp 47 is used to flip the sprite about the y-axis, and the bottom-right element is then plotted. SpriteOp 33 flips about the x-axis and is followed by plotting the top-right element.

Finally, the sprite is flipped back about the y-axis to plot the top left element.

PROCerror – This is the error routine, which will normally only be called when ESCAPE is pressed. This simply prints the error message, but first makes sure that output is directed at the screen and the correct screen bank is being displayed.

ants in *Them!* hid. Come to think of it, the most likely explanation is that this the first viewing of the inside of Jan Vibe's brain...

Jan claims that *Creeper* is a development from *Métro*, although it's quite hard to spot the connection. One of the last submissions from Jan was a cabbage simulator, and next month we have a recursive carrot lined up – opening letters marked 'The Netherlands' is getting very unpredictable these days.

Finally, in this section is *Kalejdo*, Jan's entry to our unofficial kaleidoscope competition from a few months back. It's quite amazing what you can do with a handful of lines of Basic and a few SpriteOp calls. For those interested, *Kalejdo* is carefully teased apart in this month's *Step by Step*.

## PASTURES NEW

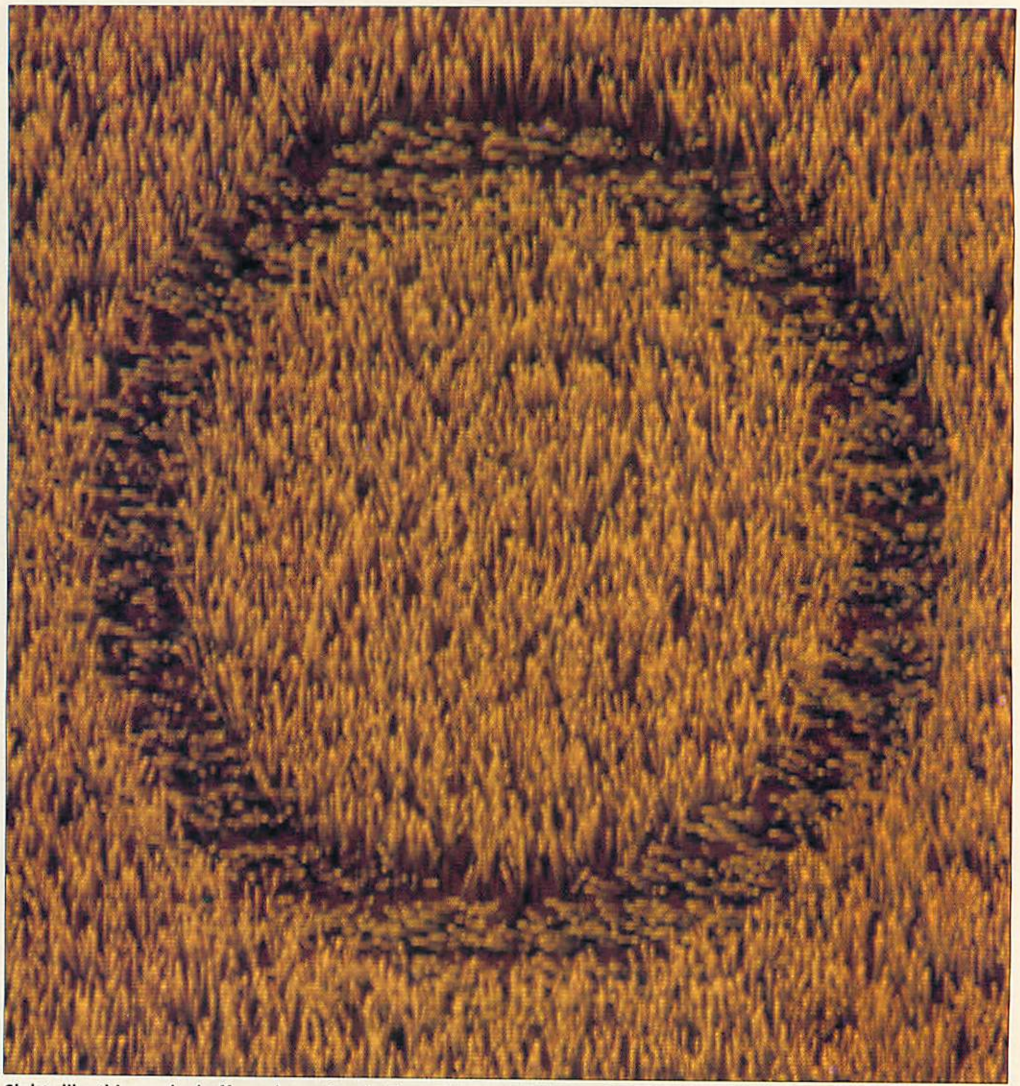
**Programs: DTwelcome+**
**Author: Allister Jenks**
**Description: Changes the Risc OS welcome message**
**Machine: 32-bit**

One of the most amazing things about the *INFO postbag is the origin of some of our submissions. Allister Jenks has written to us from Wellington, New Zealand (currently in the depths of winter, he he!) with a hint, a tip and a one-liner – how's that for good value.

**The Hint:** Adding the lines shown in the listing *DTwelcome+* to the *DTwelcome* module from the March issue enables you to display the standard Risc OS 3 welcome banner if you so wish without having to remove the module. With the new version:

- If *Welcome$Sprite* is unset or is not a string type, the standard banner will be displayed.
- If *Welcome$Sprite* is set to a valid sprite file, the first sprite in the file will be displayed.
- If *Welcome$Sprite* is set to any value starting with a dash (Ascii code 45), as in "-none", or is not a valid sprite file, nothing is displayed.

**The Tip:** There is a bug in the Risc OS 3.10 Roms in the *Configure* application. Namely, configuring Caps or ShCaps using the application gives ShCaps or Caps respec-

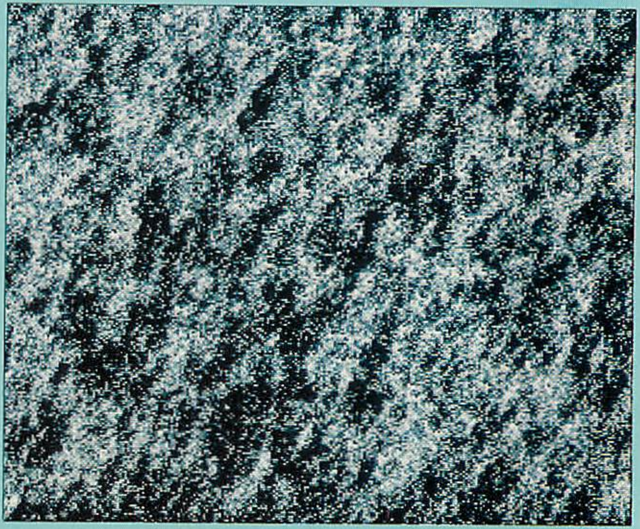


Sights like this sparked off pandemonium in Shropshire and Wiltshire. It's a funny old game...

## One line corner

We have three one-liners for you this month, starting with a surprisingly realistic mystical phenomenon.

Allister Jenks' CropCircle draws a field of wheat, strangely flattened into a circular pattern. The radius and width of the circle can be altered by changing the values of r and w at the start of the line. Owners of multisync monitors might like to run the program in Mode 20 to get a finer display.



Next up is Jan Vibe's Granite. This uses a simple averaging formula with a cunningly-chosen random number to produce a granite rock-face. Other effects can be achieved by changing the equation after the GCOL. Instead of 8*(RND(1)-.44) try 2*RND(1) for a surprisingly biscuit-like effect.

Finally in this section, TVsnow is an amazingly-useless eight-bit ditty from Andy Jeffries. This uses video registers to generate an overscanned screen and then palette effects to give that genuine BBC-at-3 o'clock-in-the-morning feeling. Sorry, but 32-bit owners will have to sit this one out, as the emulator can't quite cope with all these hardware addresses.

tively. As *Configure* is written in Arm code, the easiest way of remedying the bug is to alter the template file.

Save a copy of *Resources:$.Resources.Configure.Templates* to a disc, then load it into *FormEd*. Open the window called 'Keyboard' and click Menu over the Shift Caps radio button.

Go to the Renumber #0 submenu, type in 15 and press RETURN. This swaps the icon numbers of the Caps and Shift Caps options. Save the template file back to disc.

Now you will need to make use of the *Register* utility, which, you may remember, appeared in the November 1992 issue of *Acorn User*, to create a module which can then be easily installed in your boot sequence.

A copy of the altered template file is to be found included on the subscriber's disc. Whether you think that having a 'correct' configure templates file is worth losing 13K of Ram for is entirely up to you, however.

## WHIRLED IN ACTION

**The One-liner:** This appears in one-line corner, coming up soon...
**Program: Rotate**
**Description: Fast sprite rotation demo**
**Author: David Williams**
**Machine: 32-bit**

Although sprite rotation is nothing new – even Risc OS does it now – this particularly short and fast example is certainly worth a look. It also has a feedback option so you can relive those special effects from *Doctor Who* and *Top of the Pops* circa 1975.

You'll need a Mode 13 picture to try out the demo; copy one (or create one by saving a desktop screen using *Paint* while in Mode 13) and save as *rot_pic*. Then simply run *Rotate* and enter 'N' for feedback. Move the pointer to alter the centre of rotation. The left and right mouse buttons rotate the image, and the middle button zeros the rotation. Use the spacebar and 'L' to zoom in and out. The number of frames per second is shown on the right, together with a small version of the original picture. With an Arm3, 25 or more frames per second can be achieved.

Really wacky effects can be seen by selecting feedback at the start, in which case a screen won't be loaded. Random dots are displayed around the pointer. The keys and buttons work slightly differently – experimentation is best.

At first, move the pointer only slightly around the centre of the screen and use the space bar to zoom in slowly. What is happening is that the rotated screen is being copied to the 'original' store every frame, rather than keeping the original intact. Thus the rotation effect is cumulative and the random dots develop into trails or curious patterns.

The rotation works in a classic way. For each displayed row on the screen, the row from the original is calculated – that is, the *x* and *y* coordinates of each end of that row are found. Then *x* and *y* steps are calculated. Bytes are read from the original image one at a time, and the *x* and *y* position incremented by the steps each time. When eight bytes have been read these are stored in one go on the screen using STM. To avoid checking bounds, David immerses the original image in a big area of black. In this way you needn't worry about reaching the edge of the picture since you never actually can.

## SLIME TIME

**Program: Slime, Sparkle, Cycle**
**Description: Graphical demos**
**Author: Christopher Bassett**
**Machine: Eight-bit**

Here are a couple more colour-cycling animations from Christopher Bassett. The original *Cycle* program that animates them has been upgraded slightly to enhance the effect of *Slime* so you'll find a revised listing with the two new demos. Each demo creates and saves a screen and two new lines of DATA at the end of *Cycle* add them to the menu.

The original *Cycle* only allowed one colour to be visible at a time. To let the *Slime* really ooze, an extra



When some people look at this, all they can see is Australian surf. Some see vanilla ice cream being scooped up in the summer sun by Mr Whippy and his travelling van. Others see astronomical nebulae and other galaxies. All I can think about is Old Spice adverts and Carmina Burana. Not quite the same, really, is it?

parameter (*offset*) has been added to each animation's data. This is simply the difference between the next colour to make visible and the next to change back to black. An offset of one leaves things as they were last month, but *Slime* uses an offset of seven so consecutive groups of seven colours are changed to green for a really slimy result.

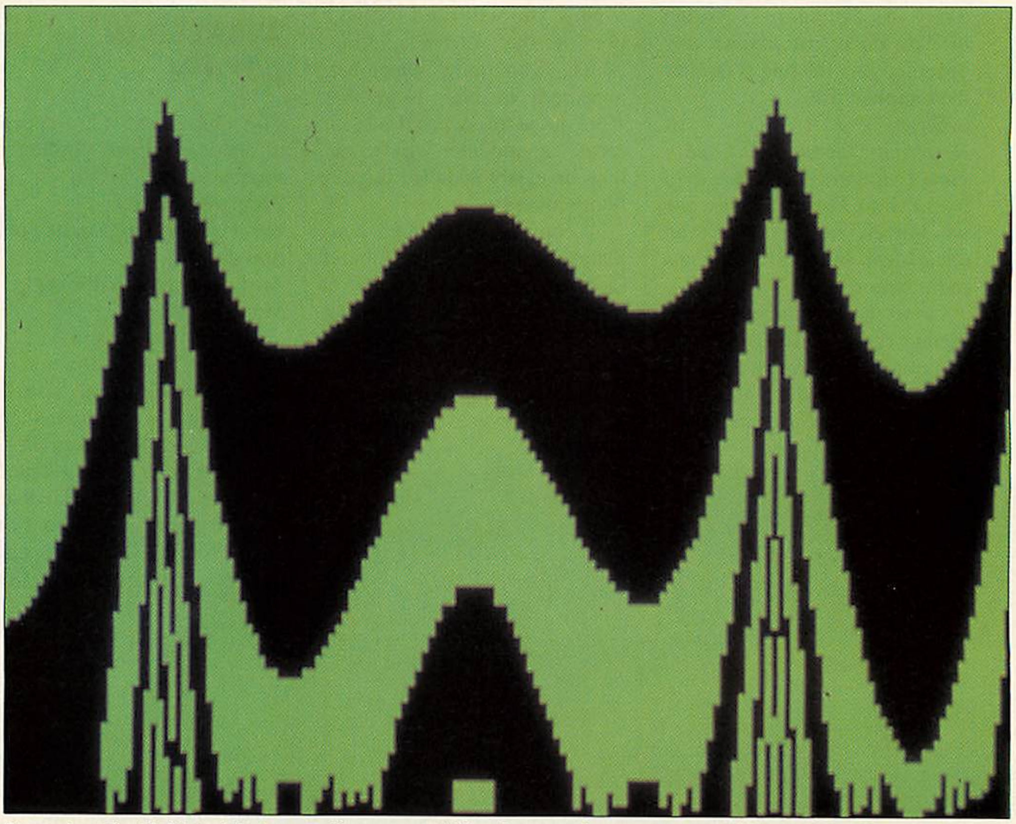
## SHARE ALIKE

You may well think that the *SharedCLibrary* module is only for use by applications written and compiled in C. In general, that is indeed the case but there are a couple of SWI calls that allow you to communicate directly with the library and use the many routines therein. So even Basic-only programmers can have access to the C Library functions and machine code programmers can save themselves a lot of code and time.

The C Library, which is a part of the Risc OS 3.1 Rom, exists to save space. Many C routines, such as those to print things, input values, perform maths operations and manipulate strings, are used by just about all C programs. Rather than include copies of the necessary code in each program it was decided to put the most commonly-used routines into a module. By using 'stubs' (effectively just tables of branch instructions which jump into the *SharedCLibrary* module) all applications can have access to the same set of library calls.

To use the C library routines you must register yourself with the module. This means using one of two calls: SharedCLibrary_LibInitAPCS_R (phew!) if you're an application, or SharedCLibrary_LibInitModule if you're a relocatable module, like our example, based on the one in the latest *Programmer's Reference Manuals*.

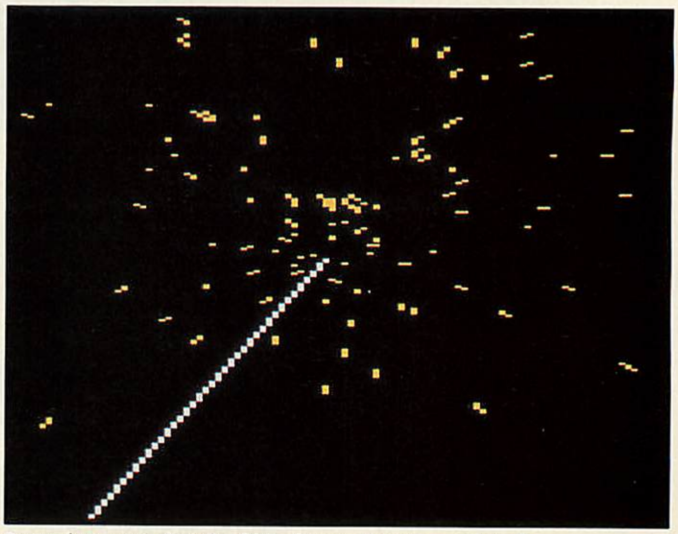
Whichever call you use, the idea is that you tell the C library module where you want it to put branches to its functions and where certain static data can be placed. These data include things like a 256-byte array containing an eight-bit mask for each character that describes it (control code, upper/lower case) and the stdin and stdout FILE structures used in C.



Remember *The Blob*? And that green slime you could buy in pots when you were a kid? Nostalgia, eh...

Having registered yourself with the C module you can then begin to call its routines. These are arranged in two sets – library kernel functions and C library functions. Kernel functions include those providing an interface to certain SWI calls (like OS_File and OS_Word), division routines, calls to enable/disable IRQs and so on. The more glamorous routines are in the C library table and these include things like printf and scanf – versatile input and output routines, string and file handling calls, mathematical functions, even searching and sorting calls, as in our example.

Our example has been written in 'bits' so you can add calls to it. The main part of the source is *SCLsrce*. It looks in the directory *SCL* (create this) for *Version* (which contains a function returning current module version number) and any files called *SWIxx*. Each *SWIxx* defines a SWI call and contains a set of functions.



Remember, remember, the fifth of November. Seasonal stuff

## *DISC

We have a bonus public domain application from Liquid Silicon. *FreeMem* sits on the iconbar and keeps you informed of the free memory you have in your machine. It uses very little memory (about 3K) and can be configured to use outline fonts for improved legibility. Full details in the help file in the application.

## *QUIT

For submissions, all but the shortest of programs should be on disc accompanied by quick instructions as to how to use them. Please write your name, address and program title on all discs and include a suitable, stamped addressed envelope if you want your disc returned. Program explanations and further details are very helpful and, if possible, should be included on the disc in the form of a *ReadMe* file.

We also welcome hints, tips, suggestions, ideas for features, questions, answers, applications, patches, features and comments. Above all keep sending in programs, because what *we'd* like to see on these pages is *your* work!

Submissions to: *INFO, BBC Acorn User, Redwood Publishing, 101 Bayham Street, London NW1 0AG.

# YELLOW PAGES

Free programs for you to type in and use

## HOW TO ENTER THE PROGRAMS

This section describes how to enter and use the more complicated programs in the yellow pages. Some of the explanations mention the Currently Selected Directory (CSD): for more details on the CSD, see the box below.

***INFO (page 95)**

**Info5**

The lines in the listing *DTwelcome+* should be added to the *DTwelcomeS* program from *INFO, March 1993. When the new *DTwelcomeS* is run, a module called *DTwelcome* is saved in the CSD. This module allows you to remove the Risc OS 3 welcome banner when the desktop is started, or to display a sprite of your choice in its place. The module must be loaded before the desktop is started (before `*Desktop` is issued).

**Info6**

If the feedback option is *not* chosen when *Rotate* is run, then the program looks for a sprite called *rot_pic* in the CSD. If this is not present, then an error will be given. If feedback is chosen, then no sprite is loaded.

**Info7 – Info9**

Type in the three programs and save them all on the same disc. Run *Slime* (by typing `CHAIN "Slime"`) to create the file *SlmetScr*, and run *Sparkle* (by typing `CHAIN "Sparkle"`) to create the file Spar*Scr*. Finally, type `CHAIN "Cycle"` to run the main program. Note that the program includes options to load the two screens (*VortScr* and *WatrScr*) from last month's *INFO, but these options will not work if the screens are not present on disc.

**Info10 – Info16**

To create the SCLmod module, do the following:

- Type in and save *SCLsrce* in a directory of your choice, and set this to the CSD.
- Create a directory called *SCL* in this directory.
- Save *Version*, *SWI00*, *SWI01*. *SWI02* and *SWI03* inside *SCL*.
- Double-click on *SCLsrce* to compile the module, which will be saved in the same directory as the source code.

To use the two test programs, *SearchTest* and *SortTest*, you must first load the *SCLmod* module by double-clicking on it. The two test programs will give a 'SWI not known' error if run without the *SCLmod* module loaded.

**BIO (page 91)**

To add the three new modules to your copy of *Bio* (which must include the enhancements presented last month), do the following:

- Type in and save the three programs, *FileLock*, *ForceWipe* and *TtoD*, inside *!Bio.Library*.
- Create a sprite file, called *Sprites*, inside *!Bio.Library*. This must contain at least the following sprites:

bio4, forcewipe4, filelock4, ttod4

which should be 34 pixels wide, 17 high, Mode 12 sprites. You can also optionally create high resolution versions of the sprites with names:

bio2, forcewipe2, filelock2, ttod2

which should be 34 pixels wide, 34 high, Mode 20 sprites.

**Setting the Currently Selected Directory (CSD)**

Some of the explanations above require the CSD to be set to a certain directory in order for them to work. To do this, you must first create an Obey file (using *Edit*) containing just the following line:

```
Dir <Obey$Dir>
```

Next save it under the name *ThisDir* in the directory you wish to set as the CSD. Finally, double-click on *ThisDir* to set the CSD to that directory.

## COMPATIBILITY CHART

Use this chart to check if a program will work on your machine. There are two columns: one for eight-bit machines like the Model B and Master 128, and one for 32-bit machines, like the A3000, A400 or A3010. If there is a star for the program in the column then it will work on your machine. Special exceptions and hardware requirements are listed as footnotes at the end of the table.

| Article | Program Name | 8-bit | 32-bit |
|---|---|---|---|
| ***INFO (page 95)** | | | |
| Info1 | *ElasticNet* | | * |
| Info2 | *Creeper* | | * |
| Info3 | *Métro* | | * |
| Info4 | *Kalejdo* | | * |
| Info5 | *DTwelcome+* | | * |
| Info6 | *Rotate* | | * |
| Info7 | *Slime* | * | |
| Info8 | *Sparkle* | * | |
| Info9 | *Cycle* | * | |
| Info10 | *SCLsrce* | | * |
| Info11 | *Version* | | * |
| Info12 | *SWI00* | | * |
| Info13 | *SWI01* | | * |
| Info14 | *SWI02* | | * |
| Info15 | *SWI03* | | * |
| Info16 | *SearchTest* | | * |
| Info17 | *Granite* | | * |
| Info18 | *Granite2* | | * |
| Info19 | *TVsnow* | * | |
| Info20 | *CropCircle* | | * |
| **BIO (page 91)** | | | |
| Bio1 | *FileLock* | | * |
| Bio2 | *ForceWipe* | | * |
| Bio3 | *TtoD* | | * |

## *INFO (page 95)

### Listing Info1

```
   10 REM      >ElasticNet (Info1)
   20 REM By  Mike Tipping
   30 REM For 32-bit machines
   40 REM (c) BAU September 1993
   50 :
   60 multiscan=FALSE
   70 :
   80 PROCinitialise
   90 PROCassemble
  100 PROCcycle
  110 END
  120 :
  130 DEF PROCcycle
  140 *POINTER 1
  150 mouse=FALSE
  160 REPEAT
  170  MOUSE mx,my,mz
  180  IF mz AND 4 THEN
  190   F%=mx
  200   G%=my
  210  ELSE
  220   F%=RND(1024)
  230   G%=RND(1024)
  240  ENDIF
  250  CALL network
  260 UNTIL FALSE
  270 ENDPROC
  280 :
  290 DEF PROCinitialise
  300 size%  = 8
  310 sigma2 = 4
  320 eta    = 0.05
  330 IF multiscan THEN
  340  MODE 28:MODE 27
  350 ELSE
  360  MODE 15:MODE 12
  370 ENDIF
  380 ORIGIN 128,0
  390 PRINT "Please Wait ...."
  400 OFF
  410 outputs% = size%^2
  420 DIM weights% 4*outputs%*2
  430 DIM metrics% 4*outputs%^2
  440 FOR i%=0 TO 1
  450  FOR o%=0 TO outputs%-1
  460   weights%!(4*(o%+outputs%*i%)) =
26268+RND(13000)
  470  NEXT
  480 NEXT
  490 FOR n%=0 TO outputs%-1
  500  FOR m%=0 TO outputs%-1
  510   lambda = eta * EXP(-(((n% MOD si
ze%)-(m% MOD size%))^2+((n% DIV size%)-(
m% DIV size%))^2)/sigma2)
  520   metrics%!(4*(n%*outputs%+m%)) =
lambda*65536
  530  NEXT
  540 NEXT
  550 FOR i%=1 TO 15
  560  COLOUR i%,15+i%*16,15+i%*16,256-i
%*16
  570 NEXT
  580 ENDPROC
  590 :
  600 DEF PROCassemble
  610 x=1
  620 y=2
  630 dx=3
  640 dy=4
  650 weight=10
  660 index=11
  670 metric=7
  680 netx=3
  690 nety=4
  700 closest=1
  710 distance=2
  720 winner=9
  730 input0=5
  740 input1=6
  750 lambda=12
  760 vdu=256
  770 :
  780 DIM code% 1024
  790 FOR pass%=0 TO 2 STEP 2
  800 P%=code%
  810 [OPT pass%
  820 .wptr    EQUD weights%
  830 .mptr    EQUD metrics%
  840 .bank    EQUD 1
  850 .network
  860          LDR    weight,wptr
  870          LDR    metric,mptr
  880          MOV    closest,#&70000000
  890          MOV    index,#(outputs%*2-
1)
  900 .winner_loop
  910          LDR    dy,[weight,index,LS
L#2]
  920          SUB    dy,dy,input1,ASL#6
  930          SUB    index,index,#1
  940          LDR    dx,[weight,index,LS
L#2]
  950          SUB    dx,dx,input0,ASL#6
  960          MUL    R12,dx,dx
  970          MOV    R12,R12,ASR#16
  980          MUL    R8,dy,dy
  990          ADD    distance,R12,R8,ASR
#16
 1000          CMP    distance,closest
 1010          MOVLE  closest,distance
 1020          MOVLE  winner,index,LSR#1
 1030          SUBS   index,index,#1
 1040          BPL    winner_loop
 1050 .draw_net
 1060          MOV    index,#0
 1070          MOV    R0,#112
 1080          LDR    R1,bank
 1090          RSB    R1,R1,#3
 1100          STR    R1,bank
 1110          SWI    "OS_Byte"
 1120          SWI    vdu+12
 1130          MOV    netx,#size%
 1140 .loopx   MOV    nety,#size%
 1150 .loopy   MOV    R8,#(outputs%/2)
 1160          MLA    R2,index,R8,winner
 1170          LDR    lambda,[metric,R2,L
SL#2]
 1180          SWI    vdu+18
 1190          MOV    R0,#0
 1200          SWI    "OS_WriteC"
 1210          ADD    R0,nety,netx
 1220          SWI    "OS_WriteC"
 1230          MOV    R0,#85
 1240          CMP    nety,#size%
 1250          SUBEQ  R0,R0,#17
 1260          LDR    x,[weight,index,LSL
#2]
 1270          RSB    R8,x,input0,ASL#6
 1280          MUL    R8,lambda,R8
 1290          ADD    R8,x,R8,ASR#16
 1300          STR    R8,[weight,index,LS
L#2]
 1310          ADD    index,index,#1
 1320          LDR    y,[weight,index,LSL
#2]
 1330          RSB    R8,y,input1,ASL#6
 1340          MUL    R8,lambda,R8
 1350          ADD    R8,y,R8,ASR#16
 1360          STR    R8,[weight,index,LS
L#2]
 1370          CMP    netx,#1
 1380          BEQ    skip
 1390          MOV    x,x,ASR#6
 1400          MOV    y,y,ASR#6
 1410          SWI    "OS_Plot"
 1420          ADD    index,index,#(size%
*2-1)
 1430          LDR    x,[weight,index,LSL
#2]
 1440          MOV    x,x,ASR#6
 1450          ADD    index,index,#1
 1460          LDR    y,[weight,index,LSL
#2]
 1470          MOV    y,y,ASR#6
 1480          SWI    "OS_Plot"
 1490          SUB    index,index,#(size%
*2)
 1500 .skip    ADD    index,index,#1
 1510          SUBS   nety,nety,#1
 1520          BNE    loopy
 1530          SUBS   netx,netx,#1
 1540          BNE    loopx
 1550
 1560          MOV    R0,#19
 1570          SWI    "OS_Byte"
 1580          MOV    R0,#113
 1590          LDR    R1,bank
 1600          SWI    "OS_Byte"
 1610          MOV    PC,R14
 1620
 1630 ]
 1640 NEXT pass%
 1650 ENDPROC
```

### Listing Info2

```
   10 REM      >Creeper (Info2)
   20 REM By  Jan Vibe
   30 REM For 32-bit machines
   40 REM (c) BAU September 1993
   50 :
   60 MODE 9:OFF
   70 DIM x(500,1),y(500,1),a(500,2)
   80 COLOUR 6,200,140,0:COLOUR 2,0,128,
0
   90 REPEAT
  100  CLS
  110  d=1:e=0:e2=1:Q=.2
  120  x(d,e)=640
  130  y(d,e)=512
  140  a(d,e)=RND(360)
  150  a=RADa(d,e)
  160  REPEAT
  170   d2=0
  180   FOR i=1 TO d
  190    x1=x(i,e)+5*SINRAD(a(i,e))
  200    y1=y(i,e)+5*COSRAD(a(i,e))
  210    c=POINT(x1,y1)
  220    IF c>=0 AND c<>6 THEN
  230     d2+=1
  240     x(d2,e2)=x1
  250     y(d2,e2)=y1
  260     a(d2,e2)=a(i,e)+RND(41)-21
  270     GCOL 6:LINE x(i,e),y(i,e),x1,y
1
  280     IF RND(1)>Q THEN
  290      d2+=1
  300      x(d2,e2)=x1
  310      y(d2,e2)=y1:j=0
  320      REPEAT
  330       j+=1
  340       a(d2,e2)=(RND(120)+a(i,e)+30
0)MOD360
  350       a=a(d2,e2)
  360       xv=x1+5*SINRADa
  370       yv=y1+5*COSRADa
  380      UNTIL POINT(xv,yv)=0 OR j=5
  390      IF j=5 d2-=1
  400     ENDIF
  410     IF RND(1)>.9 THEN
  420      a=a(i,e)-45*SGN(RND(1)-.5)
  430      a1=a-20:a2=a+20
  440      MOVE x(i,e),y(i,e)
  450      GCOL 2:MOVEx(i,e)+20*SINRADa1
,y(i,e)+20*COSRADa1
  460      PLOT 85,x(i,e)+20*SINRADa2,y(
i,e)+20*COSRADa2
  470      PLOT 85,x(i,e)+40*SINRADa,y(i
,e)+40*COSRADa
  480     ENDIF
  490     IF RND(1)>.99 THEN
  500      a=a(i,e)-60*SGN(RND(1)-.5)
  510      xx=x(i,e)+32*SINRADa
  520      yy=y(i,e)+32*COSRADa
  530      GCOL 6:LINE x(i,e),y(i,e),xx,
yy
  540      GCOL 5:FOR a=40 TO 360 STEP 4
0:LINE xx,yy,xx+16*SINRADa,yy+16*COSRADa
:NEXT
  550      GCOL 4:CIRCLE FILL xx,yy,4
  560     ENDIF
  570    ENDIF
  580   NEXT
  590   SWAP d,d2:SWAP e,e2
  600   Q=.9
  610   IF d<10 Q=.8
  620  UNTIL d=0
  630  IFINKEY(300)
  640 UNTIL FALSE
```

### Listing Info3

```
   10 REM      >MLETtro (Info3)
   20 REM By  Jan Vibe
   30 REM For 32-bit machines
   40 REM (c) BAU September 1993
   50 :
   60 MODE 13:OFF
   70 DIM x(500,1),y(500,1),dx(500,1),dy
(500,1),c(500,1)
   80 REPEAT
   90  CLS
  100  d=1:e=0:e2=1
  110  x(d,e)=640
  120  y(d,e)=512
  130  dx(d,e)=4*(RND(3)-2)
  140  dy(d,e)=4*(RND(3)-2)
  150  c(d,e)=RND(62)
  160  REPEAT
  170   d2=0
  180   FOR i=1 TO d
  190    GCOL c(i,e)
  200    POINT x(i,e),y(i,e)
  210    IF RND(1)>.85 THEN
  220     j=0
  230     REPEAT
  240      j+=1
  250      dx(i,e)=4*(RND(3)-2)
  260      dy(i,e)=4*(RND(3)-2)
  270     UNTIL POINT(x(i,e)+dx(i,e),y(i
,e)+dy(i,e))=0 OR j=3
  280    ENDIF
  290    x1=x(i,e)+dx(i,e)
  300    y1=y(i,e)+dy(i,e)
  310    IF POINT(x1,y1)=0 THEN
  320     d2+=1
  330     x(d2,e2)=x1
  340     y(d2,e2)=y1
  350     c(d2,e2)=c(i,e)
  360     dx(d2,e2)=dx(i,e)
  370     dy(d2,e2)=dy(i,e)
  380     GCOL 63:POINT x1,y1
  390     IF RND(1)>.9 THEN
  400      d2+=1
  410      x(d2,e2)=x1
  420      y(d2,e2)=y1
  430      c(d2,e2)=RND(62)
  440      j=0
  450      REPEAT
  460       j+=1
  470       dx(d2,e2)=4*(RND(3)-2)
  480       dy(d2,e2)=4*(RND(3)-2)
  490      UNTIL POINT(x1+dx(d2,e2),y1+d
y(d2,e2))=0 OR j=3
  500     ENDIF
  510    ENDIF
  520   NEXT
  530   SWAP d,d2:SWAP e,e2
  540  UNTIL d=0
  550  IFINKEY(300)
  560 UNTIL FALSE
```

### Listing Info4

```
   10 REM      >Kalejdo (Info4)
   20 REM By  Jan Vibe
   30 REM For 32-bit machines
   40 REM (c) BAU September 1993
   50 :
   60 MODE137:MODE9:OFF
   70 SYS "OS_SWINumberFromString",,"OS_
SpriteOp" TO spop
   80 ONERRORPROCerror:END
   90 PROCcolours
  100 PROCscreen
  110 PROCkalejdo
  120 END
  130 :
  140 DEF PROCerror
  150 SYS spop,256+60,spr,0,0
  160 SYS 6,112,update
  170 PRINTREPORT$;" at line "STR$ERL
  180 END
  190 :
  200 DEF PROCcolours
  210 DIM r(15),g(15),b(15)
  220 FOR i=1 TO 15
  230  r(i)=RND(510)
  240  g(i)=RND(510)
  250  b(i)=RND(510)
  260  COLOUR i,ABS(r(i) MOD 510-255),AB
S(g(i) MOD 510-255),ABS(b(i) MOD 510-255
)
  270 NEXT
  280 ENDPROC
  290 :
  300 DEF PROCscreen
  310 DIM spr &20000
  320 spr!0=&20000
  330 spr!8=16
  340 SYS spop,&109,spr
  350 SYS spop,256+15,spr,"scr",0,320,25
6,9
  360 SYS spop,256+60,spr,"scr",0
  370 FOR i=1 TO 1000
  380  GCOL RND(15)
  390  x=RND(1280)
  400  y=RND(1024)
  410  MOVE x+RND(300)-150,y+RND(300)-15
0
  420  MOVE x+RND(300)-150,y+RND(300)-15
0
  430  PLOT 85,x+RND(300)-150,y+RND(300)
-150
  440 NEXT
  450 SYS spop,256+60,spr,0,0
  460 ENDPROC
  470 :
  480 DEF PROCkalejdo
  490 update=1:display=2
  500 x=512:y=384
  510 dx=4*RND(4)*SGN(RND(1)-.5)
  520 dy=4*RND(4)*SGN(RND(1)-.5)
  530 REPEAT
  540  WAIT
  550  SYS 6,112,update:SYS 6,113,displa
y
  560  SWAP update,display
  570  z=x+dx:IF z>980 OR z<0 dx=4*(RND(
4)+1)*SGN(-dx)
  580  z=y+dy:IF z>724 OR z<0 dy=4*(RND(
4)+1)*SGN(-dy)
  590  x+=dx:y+=dy
  600  c=RND(15)
  610  r(c)=(r(c)+RND(20))MOD510
  620  g(c)=(g(c)+RND(20))MOD510
  630  b(c)=(b(c)+RND(20))MOD510
  640  COLOUR c,ABS(r(c)MOD510-255),ABS(
g(c)MOD510-255),ABS(b(c)MOD510-255)
  650  SYS spop,256+60,spr,"scr",0
  660  SYS spop,256+16,spr,"box",0,x,y,x
+256,y+256
  670  SYS spop,256+60,spr,0,0:OFF
  680  PROCplot(0,0)
  690  SYSspop,256+47,spr,"box"
  700  PROCplot(256,0)
  710  SYSspop,256+33,spr,"box"
  720  PROCplot(256,256)
  730  SYSspop,256+47,spr,"box"
  740  PROCplot(0,256)
  750 UNTIL 0
  760 ENDPROC
  770 :
  780 DEF PROCplot(px,py)
  790 LOCAL x,y
  800 FOR x1=0 TO 1023 STEP 512
  810  FOR y1=0 TO 1023 STEP 512
  820   SYS spop,256+34,spr,"box",px+128
+x1,py+y1,0
  830  NEXT
  840 NEXT
  850 ENDPROC
```

### Listing Info5

```
  300 EQUS     "0.02 ("
  490 BVS      exit
  510 BNE      exit
  511
  512 LDRB     R8,[R1]
  513 CMP      R8,#ASC"-"
  514 BEQ      no_sprite
 1449 .exit
```

### Listing Info6

```
   10 REM      >Rotate (Info6)
   20 REM By  David Williams
   30 REM For 32-bit machines
   40 REM (c) BAU September 1993
   50 :
   60 PROCinit
   70 PROCdo
   80 END
   90 :
  100 DEF PROCinit
  110 MODE 15
  120 aa%=0
  130 PRINT "Use mouse to move, Left or
Right button - Rotate"
  140 PRINT "                   , Centre b
utton - Stop rotation"
  150 PRINT "Space to zoom in and, L to
zoom out."'
  160 INPUT"Use Feedback (Y/N) ";a$
  170 feed%=(a$="Y" OR a$="y")
  180 MODE 13
```

```
  190 IF NOT feed% THEN *SCREENLOAD rot_
pic
  200 OFF
  210 GCOL 0 TINT 0
  220 RECTANGLE FILL 1024,0,256,768
  230 scr2size%=400000
  240 DIM q% 16,scr2% scr2size%
  250 FOR a%=0 TO scr2size%-3 STEP 4
  260  scr2%!a%=0
  270 NEXT
  280 scr2%+=100000
  290 !q%=148
  300 q%!4=-1
  310 SYS "OS_ReadVduVariables",q%,q%+8
  320 ss%=q%!8
  330 x%=0
  340 y%=0
  350 s%=512
  360 ang%=90
  370 PROCcode
  380 work%!12=scr2%
  390 *POINTER
  400 MOUSE TO 512,512
  410 PROCsmall
  420 ENDPROC
  430 :
  440 DEF PROCsmall
  450 FOR y%=0 TO 255 STEP 4
  460  w%=ss%+256+(y% DIV 4)*320
  470  r%=ss%+y%*320
  480  FOR x%=0 TO 252 STEP 4
  490   w%?(x%DIV4)=r%?x%
  500  NEXT
  510 NEXT
  520 ENDPROC
  530 :
  540 DEF PROCdo
  550 nf%=0
  560 TIME=0
  570 IF NOT feed% THEN CALL copy
  580 REPEAT
  590  nf%+=1
  600  IF NOT feed% THEN
  610   IF INKEY-99 s%-=1
  620   IF INKEY-87 s%+=1
  630  ELSE
  640   IF INKEY-99 s%-=3
  650   IF INKEY-87 s%+=3
  660   CALL copy
  670  ENDIF
  680  MOUSE x%,y%,b%
  690  x%-=514
  700  y%-=508
  710  x%=x%/2
  720  y%=y%/2
  730  w1=SINRAD(ang%)
  740  q1=COSRAD(ang%)
  750  w2=SINRAD(ang%+90)
  760  q2=COSRAD(ang%+90)
  770  w3=SINRAD(ang%+180)
  780  w4=SINRAD(ang%+270)
  790  x1%=512+x%+s%*w1+s%*q1
  800  x2%=512+x%+s%*w2+s%*q2
  810  y1%=512+y%+s%*w3+s%*q1
  820  y2%=512+y%+s%*w4+s%*q2
  830  IF b% AND4 ang%-=1
  840  IF b% AND2 ang%=90
  850  IF b% AND1 ang%+=1
  860  PROCshow_get_areas
  870  IF feed% THEN
  880   ax%=RND(20)-RND(20)+128
  890   ay%=RND(20)-RND(20)+128
  900   ss%?(ax%+ay%*320)=RND
  910  ENDIF
  920  PRINT TAB(32,16);INT(1/(TIME/100)
);" FPS ":TIME=0
  930 UNTIL FALSE
  940 ENDPROC
  950 :
  960 DEF PROCshow_get_areas
  970 work%!16=ss%+255*320
  980 !work%=x2%
  990 work%!4=y2%
 1000 work%!8=x1%
 1010 work%!20=y1%
 1020 CALL lbga
 1030 ENDPROC
 1040 :
 1050 DEF PROCcode
 1060 DIM code% 10000,work% 1000
 1070 FOR pa%=0 TO 2 STEP 2
 1080 P%=code%
 1090 [OPT pa%
 1100 .lbga   LDR    R0,vw
 1110         STMFD  R13!,{r14 }
 1120         MOV    R12,#255
 1130         LDMIA  R0,{r3 ,R4,R6,R8,R9,
R14}
 1140         SUB    R3,R3,R6
 1150         SUB    R4,R4,R14
 1160         RSB    R11,R3,#0
 1170         MOV    R3 ,R3,LSL #3
 1180         RSB    R10,R4,#0
 1190         MOV    R4 ,R4,LSL #3
 1200         ADD    R9 ,R9,#255
 1210         MOV    R6 ,R6,LSL #11
 1220         ADD    R6 ,R6,#64<<13
 1230         ADD    R6 ,R6,R8,LSL #13
 1240         MOV    R14,R14,LSL #11
 1250         MOV    R8 ,R10,LSL #3
 1260         MOV    R0 ,R11,LSL #3
 1270 .lp1    RSB    R2 ,R14,#320<<13
 1280         MOV    R7 ,#31
 1290 .lbg    MOV    R10,R2,ASR #13
 1300         MOV    R11,R10,LSL #8
 1310         ADD    R11,R11,R10,LSL #7
 1320         LDRB   R5 ,[R11,R6,ASR #13
]
 1330         ADD    R6 ,R6,R3
 1340         SUB    R2 ,R2,R4
 1350         MOV    R10,R2,ASR #13
 1360         MOV    R11,R10,LSL #8
 1370         ADD    R11,R11,R10,LSL #7
 1380         LDRB   R11,[R11,R6,ASR #13
]
 1390         ADD    R5 ,R11,R5,LSL #8
 1400         ADD    R6 ,R6,R3
 1410         SUB    R2 ,R2,R4
 1420         MOV    R10,R2,ASR #13
 1430         MOV    R11,R10,LSL #8
 1440         ADD    R11,R11,R10,LSL #7
 1450         LDRB   R11,[R11,R6,ASR #13
]
 1460         ADD    R5 ,R11,R5,LSL #8
 1470         ADD    R6 ,R6,R3
 1480         SUB    R2 ,R2,R4
 1490         MOV    R10,R2,ASR #13
 1500         MOV    R11,R10,LSL #8
 1510         ADD    R11,R11,R10,LSL #7
 1520         LDRB   R11,[R11,R6,ASR #13
]
 1530         ADD    R5 ,R11,R5,LSL #8
 1540         ADD    R6 ,R6,R3
 1550         SUB    R2 ,R2,R4
 1560         MOV    R10,R2,ASR #13
 1570         MOV    R11,R10,LSL #8
 1580         ADD    R11,R11,R10,LSL #7
 1590         LDRB   R1 ,[R11,R6,ASR #13
]
 1600         ADD    R6 ,R6,R3
 1610         SUB    R2 ,R2,R4
 1620         MOV    R10,R2,ASR #13
 1630         MOV    R11,R10,LSL #8
 1640         ADD    R11,R11,R10,LSL #7
 1650         LDRB   R11,[R11,R6,ASR #13
]
 1660         ADD    R1 ,R11,R1,LSL #8
 1670         ADD    R6 ,R6,R3
 1680         SUB    R2 ,R2,R4
 1690         MOV    R10,R2,ASR #13
 1700         MOV    R11,R10,LSL #8
 1710         ADD    R11,R11,R10,LSL #7
 1720         LDRB   R11,[R11,R6,ASR #13
]
 1730         ADD    R1 ,R11,R1,LSL #8
 1740         ADD    R6 ,R6,R3
 1750         SUB    R2 ,R2,R4
 1760         MOV    R10,R2,ASR #13
 1770         MOV    R11,R10,LSL #8
 1780         ADD    R11,R11,R10,LSL #7
 1790         LDRB   R11,[R11,R6,ASR #13
]
 1800         ADD    R1 ,R11,R1,LSL #8
 1810         STMDA  R9!,{r1 ,R5}
 1820         ADD    R6 ,R6,R3
 1830         SUB    R2 ,R2,R4
 1840         SUBS   R7 ,R7,#1
 1850         BGE    lbg
 1860         SUB    R6 ,R6,R3,LSL #8
 1870         SUB    R6 ,R6,R8
 1880         SUB    R9 ,R9,#64
 1890         ADD    R14,R14,R0
 1900         SUBS   R12,R12,#1
 1910         BGE    lp1
 1920         LDMFD  R13!,{pc }
 1930
 1940 .copy   LDR    R0,vss2
 1950         LDR    R1,vss
 1960         MOV    R2,#255
 1970 .cl1    LDMIA  R1!,{r3-r12 }
 1980         STMIA  R0!,{r3-r12 }
 1990         LDMIA  R1!,{r3-r12 }
 2000         STMIA  R0!,{r3-r12 }
 2010         LDMIA  R1!,{r3-r12 }
 2020         STMIA  R0!,{r3-r12 }
 2030         LDMIA  R1!,{r3-r12 }
 2040         STMIA  R0!,{r3-r12 }
 2050         LDMIA  R1!,{r3-r12 }
 2060         STMIA  R0!,{r3-r12 }
 2070         LDMIA  R1!,{r3-r12 }
 2080         STMIA  R0!,{r3-r12 }
 2090         LDMIA  R1!,{r9-r11 }
 2100         STMIA  R0!,{r9-r11 }
 2110         LDR    R12,[R1],#68
 2120         STR    R12,[R0],#132
 2130         SUBS   R2,R2,#1
 2140         BGE    cl1
 2150         MOV    PC,R14
 2160
 2170 .vw     EQUD   work%
 2180 .vss    EQUD   ss%
 2190 .vss2   EQUD   scr2%+64+(384<<6)
 2200 .vlu    EQUD   0
 2210 ]
 2220 NEXT
 2230 ENDPROC
```

## Listing Info7

```
   10 REM     >Slime (Info7)
   20 REM By  Christopher Bassett (mods
by DA)
   30 REM For 8-bit machines
   40 REM (c) BAU September 1993
   50 :
   60 MODE 2
   70 DIM mc 250
   80 PROCassem
   90 k=10
  100 r1=RND(k)
  110 r2=RND(k)
  120 r3=RND(k)
  130 FOR z=0 TO 160
  140  !lx=(z*8)
  150  !ls=ABS((COSRAD(r1*z)+COSRAD(r2*z
)+COSRAD(r3*z)))*32+16
  160  CALL line
  170 NEXT
  180 *SAVE SlmeScr 3000 8000
  190 END
  200 :
  210 DEF PROCassem
  220 oswrch=&FFEE
  230 ly=&70:hy=&71
  240 lx=&74:hx=&75
  250 ls=&78:hs=&79
  260 FOR pass=0 TO 2 STEP 2
  270 P%=mc
  280 [OPT pass
  290 .line
  300 LDA #255
  310 STA ly
  320 LDA #3
  330 STA hy
  340 LDA #25
  350 JSR oswrch
  360 LDA #4
  370 JSR oswrch
  380 LDA lx
  390 JSR oswrch
  400 LDA hx
  410 JSR oswrch
  420 LDA ly
  430 JSR oswrch
  440 LDA hy
  450 JSR oswrch
  460 LDX #1
  470 .loop
  480 LDA #18
  490 JSR oswrch
  500 LDA #0
  510 JSR oswrch
  520 TXA
  530 JSR oswrch
  540 SEC
  550 LDA ly
  560 SBC ls
  570 STA ly
  580 LDA hy
  590 SBC hs
  600 STA hy
  610 BMI end
  620 LDA #25
  630 JSR oswrch
  640 LDA #5
  650 JSR oswrch
  660 LDA lx
  670 JSR oswrch
  680 LDA hx
  690 JSR oswrch
  700 LDA ly
  710 JSR oswrch
  720 LDA hy
  730 JSR oswrch
  740 INX
  750 CPX #15
  760 BNE loop
  770 LDX #1
  780 JMP loop
  790 .end
  800 RTS
  810 ]
  820 NEXT
  830 ENDPROC
```

## Listing Info8

```
   10 REM     >Sparkle (Info8)
   20 REM By  Christopher Bassett
   30 REM For 8-bit machines
   40 REM (c) BAU September 1993
   50 :
   60 MODE 2
   70 VDU 19,15,7;0;
   80 c=1
   90 FOR s=1 TO 50
  100  xs=RND(32)-16
  110  ys=RND(30)-3
  120  x=700
  130  y=500
  140  p=0
  150  MOVE x,y
  160  REPEAT
  170   p=p+1
  180   GCOL 0,c
  190   x=x+xs
  200   y=y+ys
  210   ys=ys-0.5
  220   DRAW x,y
  230   c=c+1
  240   IF c=15 THEN c=1
  250  UNTIL p=35
  260 NEXT
  270 GCOL 0,15
  280 MOVE 400,0
  290 DRAW 700,500
  300 *SAVE SparScr 3000 8000
  310 END
```

## Listing Info9

```
   10 REM     >Cycle (Info9)
   20 REM By  Christopher Bassett (mods
by DCA)
   30 REM For 8-bit machines
   40 REM (c) BAU September 1993
   50 :
   60 DIM file% 25,code% 200
   70 PROCassem
   80 ON ERROR VDU 20:REPORT:PRINT" at l
ine ";ERL:END
   90 REPEAT
  100  MODE 7
  110  PRINTTAB(13,0)CHR$(141);CHR$(130)
;"Cycle Ride"
  120  PRINTTAB(13,1)CHR$(141);CHR$(130)
;"Cycle Ride"
  130  PRINTTAB(13,2)CHR$(132);STRING$(1
2,"_")
  140  PRINTTAB(8,3);CHR$(129);"by Chris
topher Bassett"'
  150  RESTORE
  160  n%=0
  170  REPEAT
  180   READ name$,fn$,c1%,c2%,off%
  190   IF name$<>"END" PRINTTAB(15);CHR
$(n%+65);" - ";name$;:n%=n%+1
  200  UNTIL name$="END"
  210  PRINT''"Select animation (A-";CHR
$(n%+64);")"
  220  REPEAT
  230   k%=GET AND &DF
  240  UNTIL k%>=65 AND k%<65+n%
  250  MODE 2
  260  PROCload_pic(k%-65)
  270  VDU 23;8202;0;0;0;
  280  PROCanimate
  290 UNTIL FALSE
  300 :
  310 DEF PROCanimate
  320 *FX 229,1
  330 speed%=1
  340 !dir%=1
  350 REPEAT
  360  p%=INKEY(speed%)
  370  IF p%>48 AND p%<52 speed%=(p%-49)
*3
  380  IF p%=32 THEN !dir%=-!dir%:?oc%=?
c%:?c%=FNin_range(?oc%+!dir%*off%)
  390  CALL anim
  400 UNTIL p%=27
  410 *FX 229,0
  420 ENDPROC
  430 :
  440 DEF FNin_range(v%)
  450 IF v%<1 THEN v%=v%+14 ELSE IF v%>1
4 THEN v%=v%-14
  460 =v%
  470 :
  480 DEF PROCload_pic(a%)
  490 ?col%=0
  500 RESTORE
  510 FOR i%=0 TO a%
  520  READ name$,fn$,c1%,c2%,off%
  530 NEXT
  540 ?col%=c1%
  550 ?c%=14
  560 ?oc%=?c%-off%
  570 VDU 19,15,c2%;0;
  580 PROCoscli("LOAD "+fn$+" 3000")
  590 ENDPROC
  600 :
  610 DEF PROCoscli(line$)
  620 $file%=line$
  630 X%=file% MOD 256
  640 Y%=file% DIV 256
  650 CALL &FFF7
  660 ENDPROC
  670 :
  680 DEF PROCassem
  690 oswrch=&FFEE:osbyte=&FFF4
  700 c%=&70:oc%=&71:col%=&72:dir%=&74
  710 FOR opt%=0 TO 2 STEP 2
  720 P%=code%
  730 [OPT opt%
  740 .anim
  750 LDA #19
  760 JSR osbyte
  770 LDA #19
  780 JSR oswrch
  790 LDA c%
  800 JSR oswrch
  810 LDA col%
  820 JSR oswrch
  830 LDA #0
  840 JSR oswrch
  850 JSR oswrch
  860 JSR oswrch
  870 LDA #19
  880 JSR oswrch
  890 LDA oc%
  900 JSR oswrch
  910 LDA #0
  920 JSR oswrch
  930 JSR oswrch
  940 JSR oswrch
  950 JSR oswrch
  960 LDX #c%
  970 JSR move_on
  980 LDX #oc%
  990 .move_on
 1000 LDA &00,X
 1010 CLC
 1020 ADC dir%
 1030 BNE not0
 1040 LDA #14
 1050 .not0
 1060 CMP #15
 1070 BNE not15
 1080 LDA #1
 1090 .not15
 1100 STA &00,X
 1110 RTS
 1120 ]
 1130 NEXT
 1140 ENDPROC
 1150 :
 1160 DATA "Water","WatrScr",6,5,1
 1170 DATA "Vortex","VortScr",6,4,1
 1180 DATA "Slime","SlmeScr",2,0,7
 1190 DATA "Sparkler","SparScr",3,7,1
 1200 DATA "END","END",0,0,0
```

## Listing Info10

```
   10 REM     >SCLsrce (Info10)
```

```
   20 REM By  DCA, based on PRM example
   30 REM For 32-bit machines
   40 REM (c) BAU September 1993
   50 :
   60 DIM code% &10000,swi$(64),swi(64),def(64)
   70 def()=FALSE
   80 max_swi=-1
   90 i%=0
  100 REPEAT
  110  SYS "OS_GBPB",9,"SCL",code%,1,i%,&100,"*" TO ,,,read%,i%
  120  IF read%=1 THEN
  130   j%=code%
  140   WHILE ?j%>=32
  150    j%+=1
  160   ENDWHILE
  170   ?j%=13
  180   f$=FNlc($code%)
  190   IF LEFT$(f$,3)="swi" THEN
  200    swi_no=VAL(MID$(f$,4))
  210    def(swi_no)=TRUE
  220    IF swi_no>max_swi max_swi=swi_no
  230    swi$(swi_no)="SCL."+f$
  240   ENDIF
  250  ENDIF
  260 UNTIL i%=-1
  270 IF max_swi=-1 ERROR 0,"No source files found!"
  280 swi$(64)="SCL.Version"
  290 OVERLAY swi$()
  300 swi_chunk=&CE440
  310 vbit=1<<28
  320 r0=0:r1=1:r2=2:r3=3:r4=4
  330 r5=5:r6=6:r7=7:r8=8:r9=9:r14=14
  340 sl=10:fp=11:wp=12:sp=13:lr=14:pc=15
  350 swi_chunk=&CE4C0
  360 vbit=1<<28
  370 wk=0
  380 size=FNwk(4)
  390 libreloc=FNwk(4)
  400 clientreloc=FNwk(4)
  410 FOR swi=0 TO max_swi
  420  IF def(swi) THEN z=EVAL("FNswi"+RIGHT$("0"+STR$swi,2)+"_vars")
  430 NEXT
  440 Lib_Offset=20
  450 SL_Lib_Offset=540
  460 _kernel_moduleinit=38*4
  470 _clib_initialiase=20*4
  480 _clib_finalisemodule=179*4
  490 SL_Client_Offset=-536
  500 FOR pass%=4 TO 6 STEP 2
  510 P%=0
  520 O%=code%
  530 [OPT pass%
  540 .module_base
  550          DCD     0
  560          DCD     init
  570          DCD     terminate
  580          DCD     0
  590          DCD     title
  600          DCD     help
  610          DCD     0
  620          DCD     swi_chunk
  630          DCD     swicode
  640          DCD     switbl
  650
  660 .title   EQUS    "SCL"+CHR$0
  670 .help    EQUS    FNversion+CHR$0
  680          ALIGN
  690
  700 .switbl  EQUS    "SCL"+CHR$0
  710 ]
  720 FOR swi=0 TO max_swi
  730  IF def(swi) THEN
  740   [OPT pass%
  750          EQUS    EVAL("FNswi"+RIGHT$("0"+STR$swi,2)+"_name")+CHR$0
  760   ]
  770  ELSE
  780   [OPT pass%
  790          EQUS    "Unused"+RIGHT$("0"+STR$swi,2)+CHR$0
  800   ]
  810  ENDIF
  820 NEXT
  830 [OPT pass%
  840          DCB     0
  850          ALIGN
  860
  870 .init    STMDB   (sp)!,{r7-r11 ,lr}
  880          MOV     sl,sp,LSR #20
  890          MOV     sl,sl,LSL #20
  900          LDMIA   sl,{r4 ,r5}
  910          STMDB   (sp)!,{r4 ,r5}
  920          MOV     r0,#6
  930          FNadrl(r4,rw_base)
  940          FNadrl(r5,rw_limit)
  950          SUB     r3,r5,r4
  960          ADD     r3,r3,#(wk AND &00FF)
  970          ADD     r3,r3,#(wk AND &FF00)
  980          SWI     "XOS_Module"
  990          MOV     r9,r12
 1000          STR     r2,[r12]
 1010          MOV     r12,r2
 1020          STR     r3,[r12]
 1030          ADR     r0,stubs
 1040          FNadrl(r14,kernel_vectors)
 1050          STR     r14,[r0,#4]
 1060          FNadrl(r14,kernel_vectors_end)
 1070          STR     r14,[r0,#8]
 1080          FNadrl(r14,kernel_statics)
 1090          STR     r14,[r0,#12]
 1100          FNadrl(r14,kernel_statics_end)
 1110          STR     r14,[r0,#16]
 1120          FNadrl(r14,clib_vectors)
 1130          STR     r14,[r0,#24]
 1140          FNadrl(r14,clib_vectors_end)
 1150          STR     r14,[r0,#28]
 1160          FNadrl(r14,clib_statics)
 1170          STR     r14,[r0,#32]
 1180          FNadrl(r14,clib_statics_end)
 1190          STR     r14,[r0,#36]
 1200          ADD     r1,r12,#wk
 1210          ADD     r2,r12,r3
 1220          FNadrl(r3,zi_base)
 1230          MOV     r6,#4<<16
 1240          SWI     "XSharedCLibrary_LibInitModule"
 1250          ADD     r8,r1,#Lib_Offset
 1260          LDMIA   r8,{r7 ,r8}
 1270          STMIB   r12,{r7 ,r8}
 1280          ADR     r0,kernel_init_block
 1290          ADR     r14,module_base
 1300          STR     r14,[r0]
 1310          ADR     r14,rts_block
 1320          STR     r14,[r0,#4]
 1330          ADR     r14,rts_block_end
 1340          STR     r14,[r0,#8]
 1350          ADR     r14,c_str
 1360          STR     r14,rts_block+12
 1370          BL      call_moduleinit
 1380          STMDB   (sp)!,{r9 }
 1390          BL      clib_vectors+_clib_initialiase
 1400          LDMIA   (sp)!,{r2 }
 1410          ADD     r0,sp,#(10-7+2)*4
 1420          LDMIA   r0,{r0 ,r1}
 1430          BL      user_init
 1440          MOV     sl,sp,LSR #20
 1450          MOV     sl,sl,LSL #20
 1460          LDMIA   (sp)!,{r4 ,r5}
 1470          STMIA   sl,{r4 ,r5}
 1480          LDMIA   (sp)!,{r7-r11 ,lr}
 1490          CMP     r0,#0
 1500          BICEQS  pc,lr,#vbit
 1510          ORRS    pc,lr,#vbit
 1520
 1530 .call_moduleinit
 1540          STMDB   (sp)!,{lr }
 1550          B       kernel_vectors+_kernel_moduleinit
 1560
 1570 .terminate
 1580          STMDB   (sp)!,{r7-r11 ,lr}
 1590          MOV     sl,sp,LSR #20
 1600          MOV     sl,sl,LSL #20
 1610          LDMIA   sl,{r4 ,r5}
 1620          MOV     r0,r12
 1630          LDR     r12,[r12]
 1640          LDMIB   r12,{r11 ,r12}
 1650          STMIA   sl,{r11 ,r12}
 1660          ADD     sl,sl,#SL_Lib_Offset
 1670          MOV     fp,#0
 1680          BL      clib_vectors+_clib_finalisemodule
 1690          MOV     sl,sp,LSR #20
 1700          MOV     sl,sl,LSL #20
 1710          STMIA   sl,{r4 ,r5}
 1720          LDMIA   (sp)!,{r7-r11 ,pc}^
 1730
 1740 .swicode
 1750          STMDB   (sp)!,{r0-r9 ,lr}
 1760          MOV     sl,sp,LSR #20
 1770          MOV     sl,sl,LSL #20
 1780          LDMIA   sl,{r8 ,r9}
 1790          MOV     r0,r11
 1800          MOV     r1,sp
 1810          MOV     r2,r12
 1820          LDR     r12,[r12]
 1830          LDMIB   r12,{r11 ,r12}
 1840          STMIA   sl,{r11 ,r12}
 1850          ADD     sl,sl,#SL_Lib_Offset
 1860          MOV     fp,#0
 1870          BL      user_swi
 1880          MOV     sl,sp,LSR #20
 1890          MOV     sl,sl,LSL #20
 1900          STMIA   sl,{r8 ,r9}
 1910          CMP     r0,#0
 1920          STRNE   r0,[sp]
 1930          LDMIA   (sp)!,{r0-r9 ,lr}
 1940          BICEQS  pc,lr,#vbit
 1950          ORRS    pc,lr,#vbit
 1960
 1970 .user_init
 1980          STMDB   (sp)!,{r4-r9 ,lr}
 1990          MOV     r0,#0
 2000 ]
 2010 FOR swi=0 TO max_swi
 2020  IF def(swi) THEN
 2030   k=EVAL("FNswi"+RIGHT$("0"+STR$swi,2)+"_init")
 2040   [OPT pass%
 2050          CMP     r0,#0
 2060          LDMNEIA (sp)!,{r4-r9 ,pc}^
 2070   ]
 2080  ENDIF
 2090 NEXT
 2100 [OPT pass%
 2110          MOV     r0,#0
 2120          LDMIA   (sp)!,{r4-r9 ,pc}^
 2130
 2140 .user_swi
 2150          STMDB   (sp)!,{r8 ,r9,lr}
 2160          CMP     r0,#max_swi+1
 2170          ADDCC   pc,pc,r0,LSL #3
 2180          B       unknown_swi
 2190 ]
 2200 FOR swi=0 TO max_swi
 2210  [OPT pass%
 2220          BL      swi(swi)
 2230          B       done_swi
 2240  ]
 2250 NEXT
 2260 [OPT pass%
 2270 .done_swi
 2280          LDMIA   (sp)!,{r8 ,r9,pc}
 2290 .unknown_swi
 2300          ADR     r0,bad_swi_err
 2310          LDMIA   (sp)!,{r8-r9 ,lr}
 2320          ORRS    pc,lr,#vbit
 2330 .bad_swi_err
 2340          DCD     &1E6
 2350          EQUS    "Unknown SCL operation"
 2360          DCB     0
 2370          ALIGN
 2380
 2390 .stubs   DCD     1
 2400          FNtable(16)
 2410          DCD     2
 2420          FNtable(16)
 2430          DCD     -1
 2440
 2450 .kernel_init_block
 2460          FNtable(12)
 2470
 2480 .rts_block
 2490          DCD     rts_block_end-rts_block
 2500          FNtable(20)
 2510 .rts_block_end
 2520
 2530 .c_str   EQUS    "C"+CHR$0
 2540          ALIGN
 2550
 2560 .kernel_vectors FNtable(48*4)
 2570 .kernel_vectors_end
 2580
 2590 .clib_vectors FNtable(183*4)
 2600 .clib_vectors_end
 2610 ]
 2620 REM Statics will be copied into workspace, but we have to pretend
 2630 REM they're further on in the module!
 2640 rw_base=P%
 2650 kernel_statics=P%
 2660 kernel_statics_end=kernel_statics+&31C
 2670 clib_statics=kernel_statics_end
 2680 clib_statics_end=clib_statics+&B48
 2690 zi_base=clib_statics_end
 2700 rw_limit=zi_base+&40
 2710 [OPT pass%
 2720 .null_swi
 2730          MOV     pc,lr
 2740 ]
 2750 FOR swi=0 TO max_swi
 2760  IF def(swi) THEN
 2770   swi(swi)=P%
 2780   k=EVAL("FNswi"+RIGHT$("0"+STR$swi,2)+"_code")
 2790  ELSE
 2800   swi(swi)=null_swi
 2810  ENDIF
 2820 NEXT
 2830 NEXT pass%
 2840 SYS "OS_File",10,"SCLmod",&FFA,,code%,O%
 2850 END
 2860 :
 2870 DEF FNtable(size%)
 2880 WHILE size%>0
 2890  !O%=0
 2900  O%+=4
 2910  P%+=4
 2920  size%-=4
 2930 ENDWHILE
 2940 =0
 2950 :
 2960 DEF FNwk(req)
 2970 wk+=req
 2980 =wk-req
 2990 :
 3000 DEF FNlc(a$)
 3010 LOCAL b$,i,c
 3020 FOR i=1 TO LEN(a$)
 3030  c=ASCMID$(a$,i)
 3040  IF c>=ASC"A" AND c<=ASC"Z" c+=32
 3050  b$+=CHR$c
 3060 NEXT
 3070 =b$
 3080 :
 3090 DEF FNadrl(reg,off)
 3100 off=(off-(P%+8))
 3110 [OPT pass%
 3120          ADD     reg,pc,#(off AND &FF)
 3130          ADD     reg,reg,#(off AND &FF00)
 3140 ]
 3150 =0
```

## Listing Info11

```
   10 REM     >SCL.Version (Info11)
   20 REM By  DCA
   30 REM For 32-bit machines
   40 REM (c) BAU September 1993
   50 :
   60 DEF FNversion
   70 ="SCL"+CHR$9+CHR$9+"0.10 (27-Jun-93)"
```

## Listing Info12

```
   10 REM     >SCL.SWI00 memcpy (Info12)
   20 REM By  DCA
   30 REM For 32-bit machines
   40 REM (c) BAU September 1993
   50 :
   60 DEF FNswi00_name
   70 ="memcpy"
   80 :
   90 DEF FNswi00_init
  100 =0
  110 :
  120 DEF FNswi00_vars
  130 memcpy=38*4
  140 =0
  150 :
  160 DEF FNswi00_code
  170 [OPT pass%
  180 .scl_memcpy
  190          STMDB   (sp)!,{lr }
  200          LDMIA   r1,{r0 ,r1,r2}
  210          BL      clib_vectors+memcpy
  220          MOV     r0,#0
  230          LDMIA   (sp)!,{pc }^
  240 ]
  250 =0
```

## Listing Info13

```
   10 REM     >SCL.SWI01 memmove (Info13)
   20 REM By  DCA
   30 REM For 32-bit machines
   40 REM (c) BAU September 1993
   50 :
   60 DEF FNswi01_name
   70 ="memmove"
   80 :
   90 DEF FNswi01_init
  100 =0
  110 :
  120 DEF FNswi01_vars
  130 memmove=39*4
  140 =0
  150 :
  160 DEF FNswi01_code
  170 [OPT pass%
  180 .scl_memmove
  190          STMDB   (sp)!,{lr }
  200          LDMIA   r1,{r0 ,r1,r2}
  210          BL      clib_vectors+memmove
  220          MOV     r0,#0
  230          LDMIA   (sp)!,{pc }^
  240 ]
  250 =0
```

## Listing Info14

```
   10 REM     >SCL.SWI02 qsort (Info14)
   20 REM By  DCA
   30 REM For 32-bit machines
   40 REM (c) BAU September 1993
   50 :
   60 DEF FNswi02_name
   70 ="qsort"
   80 :
   90 DEF FNswi02_init
  100 =0
  110 :
  120 DEF FNswi02_vars
  130 strcmp=45*4
  140 qsort=76*4
  150 =0
  160 :
  170 DEF FNswi02_code
  180 [OPT pass%
  190 .scl_qsort
  200          STMDB   (sp)!,{r9 ,lr}
  210          MOV     r9,r1
  220          LDR     r3,[r9,#8]
  230          CMP     r3,#6
  240          ADRLO   r1,compare_table
  250          LDRLO   r3,[r1,r3,LSL #2]
  260          ADDLO   r3,r3,r1
  270          LDR     r0,[r9,#4]
  280          LDR     r1,[r9,#0]
  290          MOV     r2,#4
  300          BL      clib_vectors+qsort
  310          MOV     r0,#0
  320          LDMIA   (sp)!,{r9 ,pc}^
  330
  340 .compare_table
  350          DCD     compare_cardinal-compare_table
  360          DCD     compare_integer-compare_table
  370          DCD     compare_cardpt-compare_table
  380          DCD     compare_intpt-compare_table
  390          DCD     compare_strci-compare_table
  400          DCD     compare_strcs-compare_table
  410
  420 .compare_cardpt
  430          LDR     r0,[r0]
  440          LDR     r1,[r1]
  450 .compare_cardinal
  460          LDR     r0,[r0]
  470          LDR     r1,[r1]
  480          CMP     r0,r1
  490          MVNLO   r0,#0
  500          MOVEQ   r0,#0
  510          MOVHI   r0,#1
  520          MOVS    pc,lr
```

```
 530
 540 .compare_intpt
 550         LDR     r0,[r0]
 560         LDR     r1,[r1]
 570 .compare_integer
 580         LDR     r0,[r0]
 590         LDR     r1,[r1]
 600         CMP     r0,r1
 610         MVNLT   r0,#0
 620         MOVGT   r0,#1
 630         MOVEQ   r0,#0
 640         MOVS    pc,lr
 650
 660 .compare_strci
 670         STMDB   (sp)!,{lr }
 680         MOV     r3,#%01
 690         LDR     r2,[r1]
 700         LDR     r1,[r0]
 710         MVN     r0,#0
 720         SWI     "XTerritory_Collat
e"
 730         LDMIA   (sp)!,{pc }^
 740
 750 .compare_strcs
 760         LDR     r0,[r0]
 770         LDR     r1,[r1]
 780         B       clib_vectors+strcm
p
 790 ]
 800 =0
```

## Listing Info15

```
  10 REM     >SCL.SWI03 bsearch (Info15
)
  20 REM By  DCA
  30 REM For 32-bit machines
  40 REM (c) BAU September 1993
  50 :
  60 DEF FNswi03_name
  70 ="bsearch"
  80 :
  90 DEF FNswi03_init
 100 =0
 110 :
 120 DEF FNswi03_vars
 130 bsearch=75*4
 140 =0
 150 :
 160 DEF FNswi03_code
 170 [OPT pass%
 180 .scl_bsearch
 190         STMDB   (sp)!,{r4 ,r9,lr}
 200         MOV     r9,r1
 210         LDR     r4,[r9,#8]
 220         CMP     r4,#6
 230         ADRLO   r1,compare_table
 240         LDRLO   r4,[r1,r4,LSL #2]
 250         ADDLO   r4,r4,r1
 260         STMDB   (sp)!,{r4 }
 270         ADD     r0,r9,#12
 280         LDR     r1,[r9,#4]
 290         LDR     r2,[r9,#0]
 300         MOV     r3,#4
 310         BL      clib_vectors+bsear
ch
 320         ADD     sp,sp,#4
 330         STR     r0,[r9,#0]
 340         MOV     r0,#0
 350         LDMIA   (sp)!,{r4 ,r9,pc}^
 360 ]
 370 =0
```

## Listing Info16

```
  10 REM     >SearchTest (Info16)
  20 REM By  DCA
  30 REM For 32-bit machines
  40 REM (c) BAU September 1993
  50 :
  60 MODE 0
  70 n%=10000
  80 DIM q% 4*n%,temp% 4
  90 FOR i%=0 TO n%-1
 100  q%!(4*i%)=i%*10
 110 NEXT
 120 FOR test%=1 TO 10
 130  val%=10*(RND(n%)-1)
 140  PRINT"Searching for ";val%;" - ";
 150  SYS "SCL_bsearch",n%,q%,0,val% TO
 where%
 160  IF where%=0 PRINT "not found!" EL
SE PRINT "matches item ";(where%-q%) DIV
 4
 170 NEXT
 180 END
```

## Listing Info17

```
  10 REM     >Granite (Info17)
  20 REM By  Jan Vibe
  30 REM For 32-bit machines
  40 REM (c) BAU September 1993
  50 :
  60 MODE9:OFF:FORn=0TO15:COLOUR n,16*n
,16*n,16*n:NEXT:FORy=4TO1016STEP4:FORx=4
TO1272STEP4:c=POINT(x-4,y)+POINT(x-4,y-4
)+POINT(x,y-4)+POINT(x+4,y-4):GCOL(c/4+8
*(RND(1)-.44))MOD16:POINTx,y:NEXT,
```

## Listing Info18

```
  10 REM     >Granite2 (Info18)
  20 REM By  Jan Vibe
  30 REM For 32-bit machines
  40 REM (c) BAU September 1993
  50 :
  60 MODE9:OFF:FORn=0TO15:COLOUR n,16*n
,16*n,16*n:NEXT:FORy=4TO1016STEP4:FORx=4
TO1272STEP4:c=POINT(x-4,y)+POINT(x-4,y-4
)+POINT(x,y-4)+POINT(x+4,y-4):GCOL(c/4+2
*RND(1))MOD16:POINTx,y:NEXT,
```

## Listing Info19

```
  10 REM     >TVsnow (Info19)
  20 REM By  Andy Jeffries
  30 REM For 8-bit machines
  40 REM (c) BAU September 1993
  50 :
  60 MODE1:VDU23;8202;0;0;0;0;:FORX=&30
00TO&7FFCSTEP4:!X=RND:NEXT:?&FE00=1:?&FE
01=98:?&FE00=2:?&FE01=107:?&FE00=6:?&FE0
1=40:?&FE00=7:?&FE01=40:P%=&900:[OPT2:LD
A&240:EOR&FE68:AND#247:STA&FE21:JMP&900:
]:CALL &900
```

## Listing Info20

```
  10 REM     >CropCircle (Info20)
  20 REM By  Allister Jenks
  30 REM For 32-bit machines
  40 REM (c) BAU September 1993
  50 :
  60 r=350:w=50:MODE12:OFF:FORn=1TO15:C
OLOURn,16*n,12*n,0:NEXT:COLOUR0,112,64,0
:FORy=950TO0STEP-50:FORx=0TO1280STEP2:a=
x+RND(32)-16:b=y+RND(40)-20:z=ABS(SQR((a
-640)^2+(b-512)^2)-r)<w:c=RND(64)-32:d=R
ND(30)+50:d=(d+z*d/3*2)/15:c=(c-z*c/2*3)
/15:s=1+z/5:MOVEa,b:FORn=1TO15:GCOLn*s:D
RAWBYc,d:NEXT,,
```

# BIO (page 91)

## Listing Bio1

```
  10 REM     >FileLock (Bio1)
  20 REM By  Duncan Roberts
  30 REM For use with Bio application
  40 REM (c) BAU September 1993
  50 END
  60 :
  70 DEF FNfilelock_name="File Protecto
r"
  80 DEF FNfilelock_args="-in * -result
s 1"
  90 DEF FNfilelock_init
 100 =0
 110 :
 120 DEF FNfilelock(in$,RETURN title$,R
ETURN a$)
 130 SYS "OS_CLI","Access "+in$+" LWR"
 140 title$="FileLock"
 150 a$="File '"+FNleaf_name(in$)+"' lo
cked"
 160 =0
 170 :
 180 DEF FNfilelock_help(window%,icon%)
 190 IF window%=-1 THEN ="Drag a file t
o lock it against deletion." THEN =""
```

## Listing Bio2

```
  10 REM     >ForceWipe (Bio2)
  20 REM By  Dave Lawrence
  30 REM For use with Bio application
  40 REM (c) BAU September 1993
  50 :
  60 DEF FNforcewipe_name = "Wipe with
force"
  70 DEF FNforcewipe_args = "-in * -dir
ectory"
  80 DEF FNforcewipe_init = 0
  90 :
 100 DEF FNforcewipe(in$)
 110 IF version%>300 THEN
 120  leaf$=FNleaf_name(in$)
 130  path$=LEFT$(in$,LENin$-LENleaf$-1
)
 140  SYS "Wimp_StartTask","Filer_Actio
n" TO fa_task%
 150  SYS "FilerAction_SendSelectedDire
ctory",fa_task%,path$+CHR$0
 160  SYS "FilerAction_SendSelectedFile
",fa_task%,leaf$+CHR$0
 170  SYS "FilerAction_SendStartOperati
on",fa_task%,2,%10101,0,0
 180 ELSE
 190  SYS "XOS_CLI","Wipe "+in$+" FR~C~
V"
 200 ENDIF
 210 =0
 220 :
 230 DEF FNforcewipe_help(window%,icon%
)
 240 IF window%=-1 THEN ="Drag a file o
r directory here to wipe it. R(ecurse) a
nd F(orce) will be used." THEN =""
```

## Listing Bio3

```
  10 REM     >TtoD
  20 REM By  Gary Palmer
  30 REM For use with Bio
  40 REM (c) BAU September 1993
  50 END
  60 :
  70 DEF FNttod_name="Text to DrawFile"
  80 :
  90 DEF FNttod_args="-in Text -out dra
wfile -send"
 100 :
 110 DEF FNttod_init
 120 SYS "Hourglass_On"
 130 LOCAL font_no%, status%
 140 ttod_inch_scale=180*256:ttod_mm_sc
ale=ttod_inch_scale/25.4
 150 ttod_mp_per_inch=72000:ttod_mp_per
_mm=ttod_mp_per_inch/25.4
 160 ttod_scale=ttod_mm_scale:ttod_mill
ipoints=ttod_mp_per_mm
 170 DIM ttod_font_name$(64), ttod_font
_size(64), ttod_work% 8192, ttod_error_q
% 256
 180 ttod_font_no%=0
 190 ttod_rect_args$="first/k,second/k,
width=w/k,fill=f/k,line=l/k"
 200 ttod_line_args$="start/k,end/k,wid
th=w/k,line=l/k"
 210 ttod_ltext_args$="x/k,y/k,text=t/k
,path=p/s"
 220 ttod_ctext_args$="first/k,second/k
,text=t/k,path=p/s"
 230 ttod_font_args$="number=no/k,name=
na/k,size=sz/k"
 240 ttod_sprite_args$="file=f/k,sprite
=name/k,first/k,second/k"
 250 ttod_path_args$="width=w/k,fill=f/
k,line=l/k"
 260 ttod_one_args$="to/k"
 270 ttod_three_args$="to/k,first/k,sec
ond/k"
 280 ttod_ellipse_args$="centre=c/k,hor
z=h/k,vert=v/k,width=w/k,line=l/k,fill=f
/k"
 290 ttod_used_handles$=""
 300 SYS "Wimp_ReadSysInfo",7 TO ttod_v
ersion% ; status%
 310 IF (status% AND 1)=1 THEN ttod_ver
sion%=200
 320 SYS "Hourglass_Smash"
 330 =0
 340 :
 350 DEF FNttod(in$, out$)
 360 ttod_error%=FALSE
 370 LOCAL in_file%, out_file%
 380 SYS "Hourglass_On"
 390 in_file%=OPENIN(in$)
 400 IF in_file%=0 THEN PROCttod_error(
"Cannot open input file", 0):=1
 410 out_file%=OPENOUT(out$)
 420 IF out_file%=0 THEN PROCttod_error
("Cannot open output file", 0):CLOSE #in
_file%:=1
 430 PROCttod_scan_fonts_needed(in_file
%)
 440 IF NOT ttod_error% PROCttod_start_
file(out_file%)
 450 IF NOT ttod_error% PROCttod_create
_font_table(out_file%)
 460 IF NOT ttod_error% PROCttod_genera
te_file(in_file%, out_file%)
 470 CLOSE#in_file%
 480 CLOSE#out_file%
 490 SYS "Hourglass_Smash"
 500 IF ttod_error% THEN =1 ELSE =0
 510 :
 520 DEF PROCttod_scan_fonts_needed(fil
e%)
 530 LOCAL in$, line_no%, com$, param$,
 name$, size$, no%, status%, handle%
 540 PTR#file%=0
 550 line_no%=0:ttod_used_handles$=""
 560 WHILE (NOT EOF#in_file%) AND (NOT
ttod_error%)
 570  in$=FNstrip_spaces(GET$#file%)
 580  line_no%+=1
 590  IF FNttod_parse(in$, com$, param$
)  AND (LEFT$(in$, 1)<>"#") THEN
 600   CASE com$ OF
 610    WHEN "font":
 620     SYS &20049, ttod_font_args$, p
aram$, ttod_work%, 1024 TO ;status%
 630     IF (status% AND 1)=1 THEN PROC
ttod_error("Syntax error", line_no%):END
PROC
 640     IF ttod_work%!0<>0 THEN no%=VA
L(FNget_str(ttod_work%!0)) ELSE PROCttod
_error("Font number needed",line_no%):EN
DPROC
 650     IF FNttod_check_font_handle(tt
od_used_handles$, no%) THEN
 660      IF ttod_work%!4=0 THEN PROCtt
od_error("Font name needed",line_no%):EN
DPROC
 670      IF ttod_work%!8=0 THEN PROCtt
od_error("Font size needed",line_no%):EN
DPROC
 680      name$=FNget_str(ttod_work%!4)
 690      SYS &60081,,name$, 16, 16, 0,
 0 TO handle%;status%
 700      IF (status% AND 1)=1 THEN PRO
Cttod_error("Incorrect font name",line_n
o%):ENDPROC
 710      SYS &40082, handle%
 720      ttod_font_name$(no%)=name$
 730      ttod_font_size(no%)=VAL(FNget
_str(ttod_work%!8))
 740      IF ttod_used_handles$<>"" THE
N ttod_used_handles$+=" "+STR$(no%) ELSE
 ttod_used_handles$=STR$(no%)
 750     ENDIF
 760   ENDCASE
 770  ENDIF
 780 ENDWHILE
 790 PTR#file%=0
 800 ENDPROC
 810 :
 820 DEF PROCttod_start_file(file%)
 830 BPUT#file%,"Draw";
 840 PROCwput(file%, 201)
 850 PROCwput(file%, 0)
 860 BPUT#file%,"TextToDraw  ";
 870 PROCwput(file%, 0)
 880 PROCwput(file%, 0)
 890 PROCwput(file%, ttod_scale*210)
 900 PROCwput(file%, ttod_scale*297)
 910 ENDPROC
 920 :
 930 DEF PROCttod_create_font_table(fil
e%)
 940 LOCAL used$, len%, tmp$, no%, pad%
, tmp%
 950 used$=ttod_used_handles$:len%=0
 960 PROCwput(file%, 0)
 970 tmp%=PTR#file%
 980 PROCwput(file%, 0)
 990 REPEAT
1000  IF FNttod_parse(used$, tmp$, used
$)<>0 THEN
1010   no%=VAL(tmp$)
1020  ELSE
1030   no%=VAL(tmp$):used$=""
1040  ENDIF
1050  len%+=LEN(ttod_font_name$(no%))+2
1060  BPUT#file%, no%
1070  BPUT#file%, ttod_font_name$(no%)+
CHR$(0);
1080 UNTIL used$=""
1090 PTR#file%=tmp%
1100 tmp%=len%:len%=(len%+3) AND NOT 3:
pad%=len%-tmp%
1110 PROCwput(file%, len%+8)
1120 PTR#file%=EXT#file%
1130 IF pad%<>0 THEN FOR no%=1 TO pad%:
BPUT#file%, 0:NEXT no%
1140 ENDPROC
1150 :
1160 DEF PROCttod_generate_file(in_file
%, out_file%)
1170 LOCAL in$, com$, param$, line_no%,
 no%, font_handle%, real_handle%, first%
, status%
1180 line_no%=0:first%=TRUE
1190 WHILE (NOT EOF#in_file%) AND (NOT
ttod_error%)
1200  in$=FNstrip_spaces(GET$#in_file%)
1210  line_no%+=1
1220  IF FNttod_parse(in$, com$, param$
) THEN
1230   CASE com$ OF
1240    WHEN "ltext" :
1250     PROCttod_generate_ltext(out_fi
le%, font_handle%, param$, line_no%)
1260    WHEN "ctext" :
1270     PROCttod_generate_ctext(out_fi
le%, font_handle%, param$, line_no%)
1280    WHEN "font" :
1290     SYS &20049, ttod_font_args$, p
aram$, ttod_work%, 1024 TO ;status%
1300     IF (status% AND 1)=1 THEN PROC
ttod_error("Syntax error", line_no%):END
PROC
1310     no%=VAL(FNget_str(ttod_work%!0
))
1320     IF no%<1 OR no%>64 THEN PROCtt
od_error("Incorrect font number",line_no
%):ENDPROC
1330     IF (NOT FNttod_check_font_hand
le(ttod_used_handles$,no%)) THEN
1340      font_handle%=no%
1350     ELSE
1360      PROCttod_error("SERIOUS INTER
NL ERROR : I've lost track of a font han
dle ("+no$+")!!", line_no%):ENDPROC
1370     ENDIF
1380     IF first% THEN first%=FALSE EL
SE SYS &40082, real_handle%
1390     SYS &40081,,ttod_font_name$(fo
nt_handle%), ttod_font_size(no%)*16, tto
d_font_size(no%)*16, 0, 0 TO real_handle
%
1400    WHEN "line" :
1410     PROCttod_generate_line(out_fil
e%, param$, line_no%)
1420    WHEN "units" :
1430     CASE FNlc(param$) OF
1440      WHEN "inch" : ttod_scale=ttod
_inch_scale:ttod_millipoints=ttod_mp_per
_inch
1450      WHEN "mm" : ttod_scale=ttod_m
m_scale:ttod_millipoints=ttod_mp_per_mm
1460      OTHERWISE : PROCttod_error("I
llegal measurement scale in 'units' comm
and",line_no%):ENDPROC
1470     ENDCASE
1480    WHEN "rectangle" :
1490     PROCttod_generate_box(out_file
%, param$, line_no%)
1500    WHEN "sprite" :
1510     PROCttod_include_sprite(out_fi
le%, param$, line_no%)
1520    WHEN "path" :
1530     PROCttod_generate_path(in_file
%, out_file%, param$, line_no%)
1540    WHEN "ellipse" :
1550     PROCttod_generate_oval(out_fil
e%, param$, line_no%)
1560   OTHERWISE: IF (LEFT$(com$, 1)<>"
#") THEN PROCttod_error("Unknown command
```

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",line_no%)
 1570   ENDCASE
 1580  ENDIF
 1590 ENDWHILE
 1600 IF NOT first% THEN SYS &40082, rea
l_handle%
 1610 ENDPROC
 1620 :
 1630 DEF PROCttod_generate_ltext(file%,
 handle%, param$, line%)
 1640 LOCAL x, y, text$, bound_x, bound_
y, len%, status%, path%, need%
 1650 SYS &20049, ttod_ltext_args$, para
m$, ttod_work%, 1024 TO ;status%
 1660 IF (status% AND 1)=1 THEN PROCttod
_error("Syntax error",line%):ENDPROC
 1670 IF ttod_work%!0=0 THEN PROCttod_er
ror("Missing x position definition from
'ltext' command",line%):ENDPROC
 1680 IF ttod_work%!4=0 THEN PROCttod_er
ror("Missing y position definition from
'ltext' command",line%):ENDPROC
 1690 IF ttod_work%!8=0 THEN PROCttod_er
ror("Missing text information from 'ltex
t' command",line%):ENDPROC
 1700 x=VAL(FNget_str(ttod_work%!0)):y=V
AL(FNget_str(ttod_work%!4)):path%=((ttod
_work%!12)<>0)
 1710 text$=FNget_str(ttod_work%!8)
 1720 IF path% THEN
 1730  x=x*ttod_millipoints:y=y*ttod_mil
lipoints
 1740  SYS &4009E,%1,8
 1750  SYS &40086,0,text$,%0110000000,x
,y
 1760  SYS &4009E,0,0 TO ,need%
 1770  IF need%>=8184 THEN PROCttod_erro
r("Text path too big for buffer!!", line
%):ENDPROC
 1780  !ttod_work%=0:!ttod_work%=8184
 1790  SYS &4009E,%10010,ttod_work%
 1800  SYS &40086,0,text$,%0110000000,x
,y
 1810  SYS &4009E,0,0 TO ,need%
 1820  SYS "OS_GBPB",2,file%,ttod_work%,
need%-ttod_work%
 1830 ELSE
 1840  SYS &40097,,text$ TO ,,, bound_x,
 bound_y
 1850  bound_x=bound_x/ttod_millipoints*
ttod_scale
 1860  bound_y=bound_y/ttod_millipoints*
ttod_scale
 1870  x=x*ttod_scale:y=y*ttod_scale
 1880  len%=(LEN(text$)+1+3) AND NOT 3
 1890  PROCttod_put_head(file%, 1, 52+le
n%, x, y, bound_x+1+x, bound_y+1+y)
 1900  PROCwput(file%, 0)
 1910  PROCwput(file%, &FFFFFF00)
 1920  PROCwput(file%, handle%)
 1930  PROCwput(file%, ttod_font_size(ha
ndle%)*640)
 1940  PROCwput(file%, ttod_font_size(ha
ndle%)*640)
 1950  PROCwput(file%, x)
 1960  PROCwput(file%, y)
 1970  PROCttod_put_padded(file%, len%,
text$+CHR$(0), CHR$(0))
 1980 ENDIF
 1990 ENDPROC
 2000 :
 2010 DEF PROCttod_generate_ctext(file%,
 handle%, param$, line%)
 2020 LOCAL x1, y1, x2, y2, x_low, y_low
, x_high, y_high, text$, bound_x, bound_
y, len%, status%, path%
 2030 SYS &20049, ttod_ctext_args$, para
m$, ttod_work%, 1024 TO ;status%
 2040 IF (status% AND 1)=1 THEN PROCttod
_error("Syntax error",line%):ENDPROC
 2050 IF ttod_work%!0=0 THEN PROCttod_er
ror("Missing first position definition f
rom 'ctext' command",line%):ENDPROC
 2060 IF ttod_work%!4=0 THEN PROCttod_er
ror("Missing second position definition
from 'ctext' command",line%):ENDPROC
 2070 IF ttod_work%!8=0 THEN PROCttod_er
ror("Missing text information from 'ctex
t' command",line%):ENDPROC
 2080 PROCttod_get_xy(FNget_str(ttod_wor
k%!0), x1, y1)
 2090 PROCttod_get_xy(FNget_str(ttod_wor
k%!4), x2, y2)
 2100 text$=FNget_str(ttod_work%!8):path
%=((ttod_work%!12)<>0)
 2110 x1=x1*ttod_scale:x2=x2*ttod_scale
 2120 y1=y1*ttod_scale:y2=y2*ttod_scale
 2130 IF x1<x2 THEN x_low=x1:x_high=x2 E
LSE x_low=x2:x_high=x1
 2140 IF y1<y2 THEN y_low=y1:y_high=y2 E
LSE y_low=y2:y_high=y1
 2150 SYS &40097,,text$ TO ,,, bound_x,
bound_y
 2160 bound_x=bound_x/ttod_millipoints*t
tod_scale
 2170 bound_y=bound_y/ttod_millipoints*t
tod_scale
 2180 IF (x_high-x_low)<bound_x THEN PRO
Cttod_error("Bounding box too small (in
x) in ctext command",line%):ENDPROC
 2190 IF (y_high-y_low)<bound_y THEN PRO
Cttod_error("Bounding box too small (in
y) in ctext command",line%):ENDPROC
 2200 x_low+=(x_high-x_low-bound_x)/2
 2210 y_low+=(y_high-y_low-bound_y)/2
 2220 len%=(LEN(text$)+1) AND NOT 3:IF (
(LEN(text$)+1) MOD 4)<>0 THEN len%+=4
 2230 IF path% THEN
 2240  x_low=x_low*ttod_millipoints/ttod
_scale:y_low=y_low*ttod_millipoints/ttod
_scale
 2250  SYS &4009E,%1,8
 2260  SYS &40086,0,text$,%0110000000,x
_low,y_low
 2270  SYS &4009E,0,0 TO ,need%
 2280  IF need%>=8184 THEN PROCttod_erro
r("Text path too big for buffer!!", line
%):ENDPROC
 2290  !ttod_work%=0:!ttod_work%=8184
 2300  SYS &4009E,%10010,ttod_work%
 2310  SYS &40086,0,text$,%0110000000,x
_low,y_low
 2320  SYS &4009E,0,0 TO ,need%
 2330  SYS "OS_GBPB",2,file%,ttod_work%,
need%-ttod_work%
 2340 ELSE
 2350  PROCttod_put_head(file%, 1, 52+le
n%, x_low, y_low, x_low+bound_x, y_low+b
ound_y)
 2360  PROCwput(file%, 0)
 2370  PROCwput(file%, &FFFFFF00)
 2380  PROCwput(file%, handle%)
 2390  PROCwput(file%, ttod_font_size(ha
ndle%)*640)
 2400  PROCwput(file%, ttod_font_size(ha
ndle%)*640)
 2410  PROCwput(file%, x_low)
 2420  PROCwput(file%, y_low)
 2430  PROCttod_put_padded(file%, len%,
text$+CHR$(0), CHR$(0))
 2440 ENDIF
 2450 ENDPROC
 2460 :
 2470 DEF PROCttod_generate_line(file%,
param$, line_no%)
 2480 LOCAL start_x, start_y, finish_x,
finish_y, x_low, y_low, x_high, y_high,
width, status%, colour%
 2490 width=0:start%=FALSE:finish%=FALSE
:colour%=&00000000
 2500 SYS &20049, ttod_line_args$, param
$, ttod_work%, 1024 TO ;status%
 2510 IF (status% AND 1)=1 THEN PROCttod
_error("Syntax error",line_no%):ENDPROC
 2520 IF ttod_work%!0=0 THEN PROCttod_er
ror("Missing start position definition f
rom 'line' command",line_no%):ENDPROC
 2530 IF ttod_work%!4=0 THEN PROCttod_er
ror("Missing end position definition fro
m 'line' command",line_no%):ENDPROC
 2540 PROCttod_get_xy(FNget_str(ttod_wor
k%!0), start_x, start_y)
 2550 PROCttod_get_xy(FNget_str(ttod_wor
k%!4), finish_x, finish_y)
 2560 IF ttod_work%!8<>0 THEN width=VAL(
FNget_str(ttod_work%!8))*640
 2570 IF ttod_work%!12<>0 THEN colour%=E
VAL(FNget_str(ttod_work%!12))
 2580 start_x=start_x*ttod_scale:start_y
=start_y*ttod_scale
 2590 finish_x=finish_x*ttod_scale:finis
h_y=finish_y*ttod_scale
 2600 IF start_x<finish_x THEN x_low=sta
rt_x:x_high=finish_x ELSE x_low=finish_x
:x_high=start_x
 2610 IF start_y<finish_y THEN y_low=sta
rt_y:y_high=finish_y ELSE y_low=finish_y
:y_high=start_y
 2620 PROCttod_put_head(file%, 2, 68, x_
low, y_low, x_high, y_high)
 2630 PROCwput(file%, &FFFFFFFF)
 2640 PROCwput(file%, colour%)
 2650 PROCwput(file%, width)
 2660 PROCwput(file%, %00000000)
 2670 PROCttod_put_path(file%, 2, start_
x, start_y)
 2680 PROCttod_put_path(file%, 8, finish
_x, finish_y)
 2690 PROCwput(file%, 0)
 2700 ENDPROC
 2710 :
 2720 DEF PROCttod_generate_box(file%, p
aram$, line_no%)
 2730 LOCAL x1, y1, x2, y2, x_low, y_low
, x_high, y_high, width, status%, line_c
ol%, fille_col%
 2740 width=0:line_col%=&00000000:fill_c
ol%=&FFFFFFFF
 2750 SYS &20049, ttod_rect_args$, param
$, ttod_work%, 1024 TO ;status%
 2760 IF (status% AND 1)=1 THEN PROCttod
_error("Syntax error",line_no%):ENDPROC
 2770 IF ttod_work%!0=0 THEN PROCttod_er
ror("Missing first position definition f
rom 'box' command",line_no%):ENDPROC
 2780 IF ttod_work%!4=0 THEN PROCttod_er
ror("Missing second position definition
from 'box' command",line_no%):ENDPROC
 2790 PROCttod_get_xy(FNget_str(ttod_wor
k%!0), x1, y1)
 2800 PROCttod_get_xy(FNget_str(ttod_wor
k%!4), x2, y2)
 2810 IF ttod_work%!8<>0 THEN width=VAL(
FNget_str(ttod_work%!8))*640
 2820 IF ttod_work%!12<>0 THEN fill_col%
=EVAL(FNget_str(ttod_work%!12))
 2830 IF ttod_work%!16<>0 THEN line_col%
=EVAL(FNget_str(ttod_work%!16))
 2840 x1=x1*ttod_scale:x2=x2*ttod_scale
 2850 y1=y1*ttod_scale:y2=y2*ttod_scale
 2860 IF x1<x2 THEN x_low=x1:x_high=x2 E
LSE x_low=x2:x_high=x1
 2870 IF y1<y2 THEN y_low=y1:y_high=y2 E
LSE y_low=y2:y_high=y1
 2880 PROCttod_put_head(file%, 2, 108, x
_low, y_low, x_high, y_high)
 2890 PROCwput(file%, fill_col%)
 2900 PROCwput(file%, line_col%)
 2910 PROCwput(file%, width)
 2920 PROCwput(file%, %00000000)
 2930 PROCttod_put_path(file%, 2, x1, y1
)
 2940 PROCttod_put_path(file%, 8, x2, y1
)
 2950 PROCttod_put_path(file%, 8, x2, y2
)
 2960 PROCttod_put_path(file%, 8, x1, y2
)
 2970 PROCttod_put_path(file%, 8, x1, y1
)
 2980 PROCwput(file%, 5)
 2990 PROCwput(file%, 0)
 3000 ENDPROC
 3010 :
 3020 DEF PROCttod_include_sprite(out_fi
le%, param$, line_no%)
 3030 LOCAL x1, y1, x2, y2, x_low, y_low
, x_high, y_high, file$, in_file%, sprit
e$, status%, number%, len%, tmp$, tmp%
 3040 SYS &20049, ttod_sprite_args$, par
am$, ttod_work%, 1024 TO ;status%
 3050 IF (status% AND 1)=1 THEN PROCttod
_error("Syntax error",line_no%):ENDPROC
 3060 IF ttod_work%!0=0 THEN PROCttod_er
ror("Missing file name from 'sprite' com
mand",line_no%):ENDPROC
 3070 IF ttod_work%!4=0 THEN PROCttod_er
ror("Missing sprite name from 'sprite' c
ommand", line_no%):ENDPROC
 3080 IF ttod_work%!8=0 THEN PROCttod_er
ror("Missing first position definition f
rom 'sprite' command",line_no%):ENDPROC
 3090 IF ttod_work%!12=0 THEN PROCttod_e
rror("Missing second position definition
 from 'sprite' command",line_no%):ENDPRO
C
 3100 sprite$=FNget_str(ttod_work%!4)
 3110 IF LEN(sprite$)>12 THEN PROCttod_e
rror("Illegal sprite name in 'sprite' co
mmand", line_no%):ENDPROC
 3120 file$=FNget_str(ttod_work%!0)
 3130 in_file%=OPENIN(file$)
 3140 IF in_file%=0 THEN PROCttod_error(
"File '"+file$+"' not found in 'sprite'
command",line_no%):ENDPROC
 3150 number%=FNwget(in_file%)
 3160 IF number%=0 THEN PROCttod_error("
File '"+file$+"' contains no sprites"):E
NDPROC
 3170 PTR#in_file%=FNwget(in_file%)-4
 3180 tmp%=PTR#in_file%
 3190 REPEAT
 3200  len%=FNwget(in_file%)
 3210  tmp$=GET$#in_file%
 3220  IF tmp$<>sprite$ THEN number%=-1
ELSE number%-=1
 3230  IF number%>0 THEN PTR#in_file%=PT
R#in_file%+len%-16:tmp%=PTR#in_file%
 3240 UNTIL number%<1
 3250 IF number%<>-1 THEN PROCttod_error
("Sprite '"+sprite$+" not found in file
'"+file$+"'"):ENDPROC
 3260 PROCttod_get_xy(FNget_str(ttod_wor
k%!8), x1, y1)
 3270 PROCttod_get_xy(FNget_str(ttod_wor
k%!12), x2, y2)
 3280 x1=x1*ttod_scale:x2=x2*ttod_scale
 3290 y1=y1*ttod_scale:y2=y2*ttod_scale
 3300 IF x1<x2 THEN x_low=x1:x_high=x2 E
LSE x_low=x2:x_high=x1
 3310 IF y1<y2 THEN y_low=y1:y_high=y2 E
LSE y_low=y2:y_high=y1
 3320 PROCttod_put_head(out_file%, 5, 24
+((len%+3) AND NOT 3), x_low, y_low, x_h
igh, y_high)
 3330 PTR#in_file%=tmp%
 3340 IF len%<=1024 THEN
 3350  SYS &c, 4, in_file%, ttod_work%,
len%
 3360  SYS &c, 2, out_file%, ttod_work%,
 len%
 3370 ELSE
 3380  tmp%=0
 3390  WHILE tmp%=0
 3400   SYS &c, 4, in_file%, ttod_work%,
 1024 TO ,,,tmp%
 3410   SYS &c, 2, out_file%, ttod_work%
, 1024-tmp%
 3420  ENDWHILE
 3430 ENDIF
 3440 CLOSE#in_file%
 3450 ENDPROC
 3460 :
 3470 DEF PROCttod_generate_oval(file%,
param$, line_no%)
 3480 LOCAL x, y, horz, vert, width, lin
e_col%, fill_col%, const
 3490 width=0:colour%=&000000:const=0.55
2256944
 3500 SYS &20049, ttod_ellipse_args$, pa
ram$, ttod_work%, 1024 TO ;status%
 3510 IF (status% AND 1)=1 THEN PROCttod
_error("Syntax error",line_no%):ENDPROC
 3520 IF ttod_work%!0=0 THEN PROCttod_er
ror("Missing centre position definition
from 'ellipse' command",line_no%):ENDPRO
C
 3530 IF ttod_work%!4=0 THEN PROCttod_er
ror("Missing horizontal size definition
from 'ellipse' command",line_no%):ENDPRO
C
 3540 IF ttod_work%!8=0 THEN PROCttod_er
ror("Missing vertical size definition fr
om 'ellipse' command",line_no%):ENDPROC
 3550 PROCttod_get_xy(FNget_str(ttod_wor
k%!0), x,y)
 3560 horz=VAL(FNget_str(ttod_work%!4)):
vert=VAL(FNget_str(ttod_work%!8))
 3570 IF ttod_work%!12<>0 THEN width=VAL
(FNget_str(ttod_work%!12))*640
 3580 IF ttod_work%!16<>0 THEN line_col%
=EVAL(FNget_str(ttod_work%!16))
 3590 IF ttod_work%!20<>0 THEN fill_col%
=EVAL(FNget_str(ttod_work%!20))
 3600 x=x*ttod_scale:y=y*ttod_scale:horz
=horz*ttod_scale:vert=vert*ttod_scale
 3610 PROCttod_put_head(file%, 2, 172, x
-horz,y-vert,x+horz,y+vert)
 3620 PROCwput(file%, fill_col%)
 3630 PROCwput(file%, line_col%)
 3640 PROCwput(file%, width)
 3650 PROCwput(file%, %00000000)
 3660 PROCttod_put_path(file%, 2, x, y-v
ert)
 3670 PROCttod_put_bezier(file%, x+horz,
 y, x+horz*const, y-vert, x+horz, y-vert
*const)
 3680 PROCttod_put_bezier(file%, x, y+ve
rt, x+horz, y+vert*const, x+horz*const,
y+vert)
 3690 PROCttod_put_bezier(file%, x-horz,
 y, x-horz*const, y+vert, x-horz, y+vert
*const)
 3700 PROCttod_put_bezier(file%, x, y-ve
rt, x-horz, y-vert*const, x-horz*const,
y-vert)
 3710 PROCwput(file%, 5)
 3720 PROCwput(file%, 0)
 3730 ENDPROC
 3740 :
 3750 DEF PROCttod_generate_path(in_file
%, out_file%, param$, RETURN line_no%)
 3760 LOCAL in$, com$, par$, status%, he
ad_pos%, x_low, x_high, y_low, y_high, s
ub%, x1, x2, y1, y2, finish%
 3770 finish%=FALSE:sub%=FALSE:x_low=&7F
FFFFFF:x_high=0:y_low=&7FFFFFFF:y_high=0
 3780 head_pos%=PTR#out_file%
 3790 PROCttod_put_head(out_file%, 2, 0,
 0, 0, 0, 0)
 3800 SYS &20049, ttod_path_args$, param
$, ttod_work%, 1024 TO ;status%
 3810 IF (status% AND 1)=1 THEN PROCttod
_error("Syntax error in command 'path'",
line_no%):ENDPROC
 3820 IF ttod_work%!8=0 THEN PROCwput(ou
t_file%, &FFFFFF00) ELSE PROCwput(out_fi
le%, VAL(FNget_str(ttod_work%!0)))
 3830 IF ttod_work%!4=0 THEN PROCwput(ou
t_file%, 0) ELSE PROCwput(out_file%, VAL
(FNget_str(ttod_work%!0)))
 3840 IF ttod_work%!0=0 THEN PROCwput(ou
t_file%, 0) ELSE PROCwput(out_file%, VAL
(FNget_str(ttod_work%!0))*640)
 3850 PROCwput(out_file%, 0)
 3860 WHILE (finish%=FALSE) AND (NOT tto
d_error%)
 3870  in$=FNstrip_spaces(GET$#in_file%)
 3880  line_no%+=1
 3890  status%=FNttod_parse(in$, com$, p
ar$)
 3900  CASE com$ OF
 3910   WHEN "draw" :
 3920    IF NOT sub% THEN
 3930     PROCttod_error("Not in a sub-p
ath for 'draw' command", line_no%):ENDPR
OC
 3940    ELSE
 3950     PROCttod_path_draw(out_file%,
par$, line_no%, x1, y1)
 3960     IF x1>x_high THEN x_high=x1
 3970     IF x1<x_low  THEN x_low=x1
 3980     IF y1>y_high THEN y_high=y1
 3990     IF y1<y_low  THEN y_low=y1
 4000    ENDIF
 4010   WHEN "move" :
 4020    sub%=TRUE
 4030    PROCttod_path_move(out_file%, p
ar$, line_no%, x1, y1)
 4040    IF x1>x_high THEN x_high=x1
 4050    IF x1<x_low  THEN x_low=x1
 4060    IF y1>y_high THEN y_high=y1
 4070    IF y1<y_low  THEN y_low=y1
 4080   WHEN "curve" :
 4090    PROCttod_path_curve(out_file%,
par$, line_no%, x1, y1, x2, y2)
 4100    IF x1>x_high THEN x_high=x1
 4110    IF x1<x_low  THEN x_low=x1
 4120    IF y1>y_high THEN y_high=y1
 4130    IF y1<y_low  THEN y_low=y1
 4140    IF x2>x_high THEN x_high=x2
 4150    IF x2<x_low  THEN x_low=x2
 4160    IF y2>y_high THEN y_high=y2
 4170    IF y2<y_low  THEN y_low=y2
 4180   WHEN "close" :
 4190    IF sub%=FALSE THEN
 4200     PROCttod_error("Not in a sub-p
ath for 'close' command", line_no%):ENDP
ROC
 4210    ELSE
 4220     sub%=FALSE
 4230     PROCwput(out_file%, 5)
 4240    ENDIF
 4250   WHEN "end" :
 4260    PROCwput(out_file%, 0)
 4270    finish%=TRUE
 4280  OTHERWISE :
 4290   IF LEFT$(com$, 1)<>"#" THEN PROC
ttod_error("Illegal command in path segm
ent", line_no%):ENDPROC
 4300  ENDCASE
 4310 ENDWHILE
 4320 len%=PTR#out_file% - head_pos%
 4330 PTR#out_file%=head_pos%
 4340 PROCttod_put_head(out_file%, 2, le
n%, x_low, y_low, x_high, y_high)
```

```
4350 PTR#out_file%=EXT#out_file%
4360 ENDPROC
4370 :
4380 DEF PROCttod_path_move(file%, para
m$, line%, RETURN x, RETURN y)
4390 SYS &20049, ttod_one_args$, param$
, ttod_work%, 1024 TO ;status%
4400 IF (status% AND 1)=1 THEN PROCttod
_error("Syntax error in 'move' command",
line_no%):ENDPROC
4410 IF ttod_work%!0=0 THEN PROCttod_er
ror("Missing co-ordinates from 'move' co
mmand",line_no%):ENDPROC
4420 PROCttod_get_xy(FNget_str(ttod_wor
k%!0), x, y)
4430 x=x*ttod_scale:y=y*ttod_scale
4440 PROCttod_put_path(file%, 2, x, y)
4450 ENDPROC
4460 :
4470 DEF PROCttod_path_draw(file%, para
m$, line%, RETURN x, RETURN y)
4480 SYS &20049, ttod_one_args$, param$
, ttod_work%, 1024 TO ;status%
4490 IF (status% AND 1)=1 THEN PROCttod
_error("Syntax error in 'draw' command",
line_no%):ENDPROC
4500 IF ttod_work%!0=0 THEN PROCttod_er
ror("Missing co-ordinates from 'draw' co
mmand",line_no%):ENDPROC
4510 PROCttod_get_xy(FNget_str(ttod_wor
k%!0), x, y)
4520 x=x*ttod_scale:y=y*ttod_scale
4530 PROCttod_put_path(file%, 8, x, y)
4540 ENDPROC
4550 :
4560 DEF PROCttod_path_curve(file%, par
am$, line%, RETURN x1, RETURN y1, RETURN
 x2, RETURN y2)
4570 LOCAL x, y
4580 SYS &20049, ttod_three_args$, para
m$, ttod_work%, 1024 TO ;status%
4590 IF (status% AND 1)=1 THEN PROCttod
_error("Syntax error in 'curve' command"
,line_no%):ENDPROC
4600 IF ttod_work%!0=0 THEN PROCttod_er
ror("Missing co-ordinates from 'curve' c
ommand",line_no%):ENDPROC
4610 IF ttod_work%!4=0 THEN PROCttod_er
ror("Missing co-ordinates from 'curve' c
ommand",line_no%):ENDPROC
4620 IF ttod_work%!8=0 THEN PROCttod_er
ror("Missing co-ordinates from 'curve' c
ommand",line_no%):ENDPROC
4630 PROCttod_get_xy(FNget_str(ttod_wor
k%!0), x, y)
4640 PROCttod_get_xy(FNget_str(ttod_wor
k%!4), x1, y1)
4650 PROCttod_get_xy(FNget_str(ttod_wor
k%!8), x2, y2)
4660 x=x*ttod_scale:y=y*ttod_scale
4670 x1=x1*ttod_scale:y1=y1*ttod_scale
4680 x2=x2*ttod_scale:y2=y2*ttod_scale
4690 PROCttod_put_path(file%, 6, x1, y1
)
4700 PROCwput(file%,x2)
4710 PROCwput(file%,y2)
4720 PROCwput(file%,x)
4730 PROCwput(file%,y)
4740 ENDPROC
4750 :
4760 DEF PROCttod_get_xy(par$, RETURN x
, RETURN y)
4770 LOCAL pos%
4780 pos%=INSTR(par$, ",")
4790 x=VAL(FNstrip_spaces(LEFT$(par$,po
s%-1)))
4800 y=VAL(FNstrip_spaces(RIGHT$(par$,L
EN(par$)-pos%)))
4810 ENDPROC
4820 :
4830 DEF PROCttod_put_path(file%, id%,
x, y)
4840 PROCwput(file%, id%):PROCwput(file
%, x):PROCwput(file%, y)
4850 ENDPROC
4860 :
4870 DEF PROCttod_put_bezier(file%, x,
y, x1, y1, x2, y2)
4880 PROCwput(file%, 6):PROCwput(file%,
 x1):PROCwput(file%, y1)
4890 PROCwput(file%, x2):PROCwput(file%
, y2)
4900 PROCwput(file%, x):PROCwput(file%,
 y)
4910 ENDPROC
4920 :
4930 DEF PROCttod_put_head(file%, id%,
size%, x1, y1, x2, y2)
4940 PROCwput(file%, id%):PROCwput(file
%, size%)
4950 PROCwput(file%, x1):PROCwput(file%
, y1)
4960 PROCwput(file%, x2):PROCwput(file%
, y2)
4970 ENDPROC
4980 :
4990 DEF PROCttod_put_padded(file%, len
%, str$, pad$)
5000 LOCAL strlen%
5010 strlen%=LEN(str$)
5020 IF strlen% < len% THEN
5030  BPUT#file%, str$;
5040  BPUT#file%, STRING$(len%-strlen%,
 pad$);
5050 ELSE
5060  BPUT#file%, str$;
5070 ENDIF
5080 ENDPROC
5090 :
5100 DEF FNttod_check_font_handle(handl
es$, no%)
5110 =(INSTR(handles$, STR$(no%)) = 0)
5120 :
5130 DEF PROCttod_error(error$, no%)
5140 IF no%=0 THEN
5150  $(ttod_error_q%+4)=error$
5160  SYS &400DF,ttod_error_q%, %1, "Te
xt-2-Draw"
5170  ttod_error%=TRUE
5180 ELSE
5190  $(ttod_error_q%+4)=error$+" at li
ne "+STR$(no%)
5200  SYS &400DF,ttod_error_q%, %1, "Te
xt-2-Draw"
5210  ttod_error%=TRUE
5220 ENDIF
5230 ENDPROC
5240 :
5250 DEF FNttod_parse(in$, RETURN com$,
 RETURN par$)
5260 LOCAL pos%
5270 pos%=INSTR(in$, " ")
5280 com$=FNlc(FNstrip_spaces(LEFT$(in$
, pos%)))
5290 par$=FNstrip_spaces(RIGHT$(in$, LE
N(in$) - pos%))
5300 IF pos%=0 THEN com$=in$:par$=""
5310 =pos%
5320 :
5330 DEF FNttod_help(window%,icon%)
5340 IF window%=-1 THEN ="Drag a draw d
escription file here to generate a draw
file." ELSE =""
```

## BIO: TtoD file format (page 91)

units <mm|inch>

Change the units that co-ordinates are specified in. Either millimetres (mm) or inches (inch).

font -number <no> -name <name> -size <size>

Specify the local font. The number is the internal *Draw* file font number. The name is the Risc OS font name, such as Trinity.Medium. The size is the point size of the text. If you have defined a font previously in the same file, just put 'font -number <number>' to recall the definition.

line -start <x,y> -end <x,y> [-width <w>] [-line <&BBGGRR00>]

Draw a line. Start and end parameters are in *x,y* format (e.g. -start 10,10). The width is the line width that will be used. Zero represents the thinnest line the device can produce. The colour is a hex number, the format of which is &BBGGRR00, so colour &2020ff gives a light red colour.

rectangle -first <x,y> -second <x,y> [-width <w>] [-line <&BBGGRR00>] [-fill <&BBGGRR00>]

Draws a rectangle. The co-ordinate pair can be specified any way you like, as long as the two co-ordinates represent opposite corners. Width and colour as above.

sprite -first <x,y> -second <x,y> -file "file" -name "name"

Reads in a sprite from file "file" and displays sprite called "name" in the file. The first and second co-ordinates specify the bounding boxes.

ltext -x <x> -y <y> [-path] -text "text"

Displays the text in the text parameter at the specified *x,y* co-ordinates; the *x,y* are at the bottom left. The path parameter converts the text to a path (Risc OS 3 only).

ctext -first <x,y> -second <x,y> [-path] -text "text"

The text centred vertically and horizontally in the box, with optional conversion to a path. (Again, path parameter is Risc OS 3 only).

ellipse -centre <x,y> -horz <x> -vert <y> [-line <&BBGGRR00>] [-fill <&BBGGRR00>]

Draws an oval (ellipse), centred at the specified co-ordinates, with major and minor diagonals specified by horz and vert.

path [-width <w>] [-fill <&BBGGRR00>] [-line <&BBGGRR00>]

Starts a path object.

move -to <x,y>

Moves the 'cursor' in the path object.

draw -to <x,y>

Draws a line in the path object.

curve -to <x,y> -first <x,y> -second <x,y>

Draws a bezier curve to the specified co-ordinates, using first and second as control points.

close

Close the path.

end

End the path object.

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# THE MOXON INTERVIEW

## DAVE McCARTNEY

Sometimes it's hard to see why people do things. Take the public domain scene: as far as the punter is concerned, it's a great idea, somewhere you can obtain quality software for next-to-nothing. But what about the poor sod who runs the PD library, who has to keep track of hundreds of discs, duplicate and send them out?

Not my idea of fun, but for Dave McCartney, full-time chef and the man responsible for The Datafile, one of the largest Acorn PD libraries in the country, it's the hobby that went out of control.

'It's a labour of love, no doubt about it,' says Dave. 'Today, I sent out 60 discs, and on average I send out 2000 discs per month. You sometimes wonder if it's worth it – it takes up all my spare time.'

Ever heard the phrase 'everything in moderation'? Well, it doesn't seem to apply here. While I'm chatting to Dave, the sound of a disc duplicator chugging away upstairs disturbs the otherwise peaceful RAF base where Dave lives with his wife Sue. Apparently it's in use almost constantly, even at night.

What on earth drives an otherwise sane man like Dave to run a PD library?

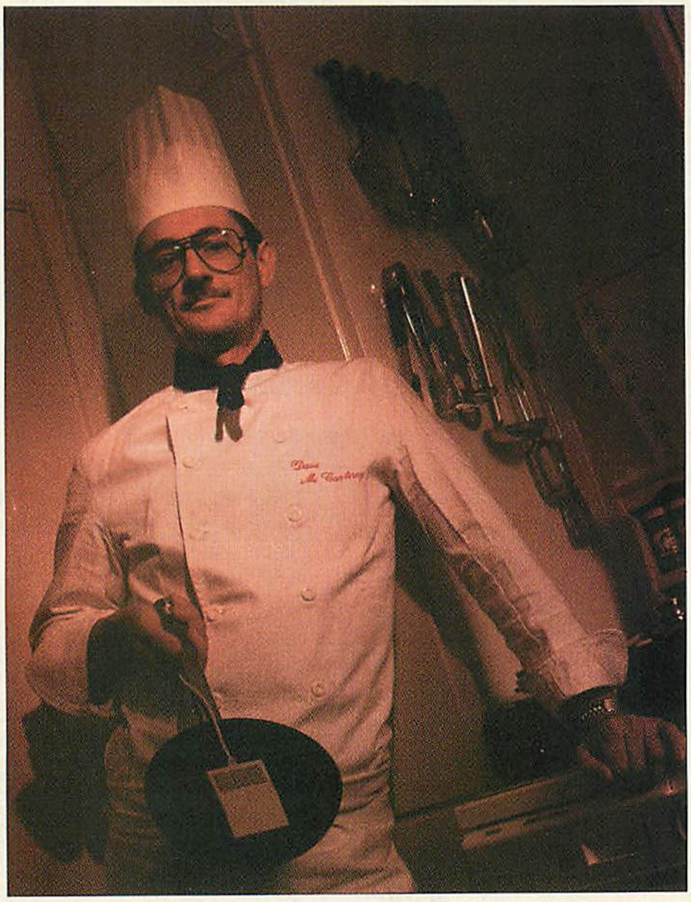
'I receive new stuff from people every day,' says Dave. 'That's one of the great things about running a library – the variety. The public domain can only get bigger and the quality of PD software is getting better all the time. The market as a whole has become much more professional than it was even a year ago, and it's up to the owners of PD libraries to keep the standards high.'

Excellent PD applications like *Translator*, *Powerbase*, and *Zap* back up Dave's theory. However, he's less optimistic about the concept of shareware, where users are supposed to register their details with the author, enclosing a small amount of money.

'I can't see shareware ever working in general,' he says. 'On the whole shareware is of a high standard because the authors want a good response to their registration, and there won't be one unless the software is good.'

Another reason Dave likes the PD scene so much is that it enables him to keep his ear close to the ground. Not being commercially dependent on any particular aspect of the computer market, he's able to take an impartial look at the Acorn world. And he's not one to mince his words.

'I don't think the Acorn market is heading in the right direction,' he says, expressing an opinion most of us have heard before. 'Acorn doesn't seem to push their products properly in any markets except education. They've got the Arc into the high street, but if you go into Dixons they don't know anything about the computer and they'll try to sell you an Amiga or an ST. Acorn should have made sure those who do the selling know how. They didn't.'



MARTIN HASWELL

**‘ Public domain is a labour of love. It's a hobby that got out of control. ’**

Sounds harsh, but is it fair? Listen to this...

'I went down to a print shop to see about printing some brochures, and I saw they had a Mac and asked why they used one. The girl behind the counter said: "What else is there?" and when I told her about the Arc, she'd never heard of it.

'If you talk about the BBC computer, then everyone knows what you're on about. If you say Amiga, Atari, Sega, IBM or Nintendo, they know what you mean. If you say Acorn or Archimedes, nine times out of ten you get a blank. Acorn have to get their name known again, like in the heyday of the Beeb.'

But why is this? The Archimedes is respected as a very powerful machine – a potential world beater, basically. Why the pessimism from someone who knows the Acorn world better than most?

'The Arc doesn't have the large, powerful packages to make businesses think "Let's ditch our IBMs and get some Acorns." Look at *Impression*; it's easily the best DTP package on the Archimedes. However, it seems to me that CC have lost momentum. New versions take ages to appear, there have been precious few radical new features added and the Mac equivalent is still considerably more powerful.'

Ouch! It's never nice to hear this sort of criticism, but think about it: how many businesses do you know which have seriously considered Acorns? According to Dave, once someone buys an Acorn, they're converted, it's the lack of software that's the problem.

Maybe the exposure to so much free software has tainted Dave's viewpoint. Or maybe he's right. Whatever the reasons, it's refreshing to hear people in high places speak their minds. If this is public domain, I want in.

**Mark Moxon**



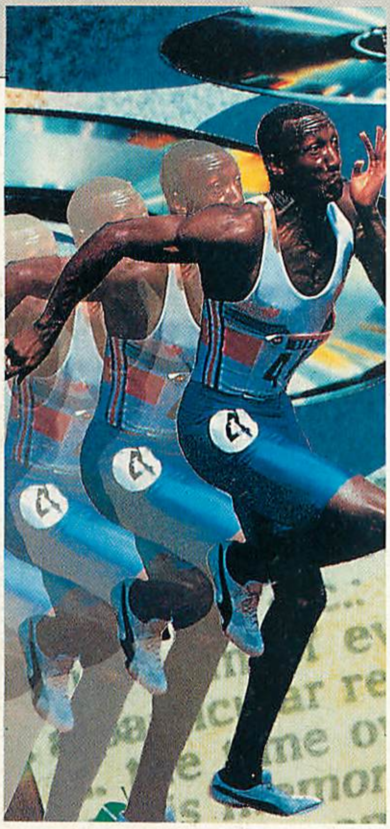
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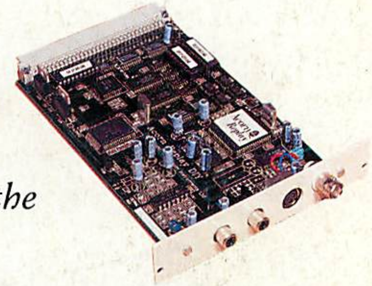


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